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BUSINESS TECHNOLOGY LEADERSHIP

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BEYOND VISTA

Inside Microsoft's Plan to Dominate the Web 2.0 Enterprise Page 48

BY BEN WORTHEN

Leading Microsoft into the world of software as a service (from left): **Steve Ballmer**, CEO; **Kevin Turner**, COO; and **Andy Lees**, VP of server and tools marketing

NOVEMBER 15, 2006 | $9.00 | CIO.COM

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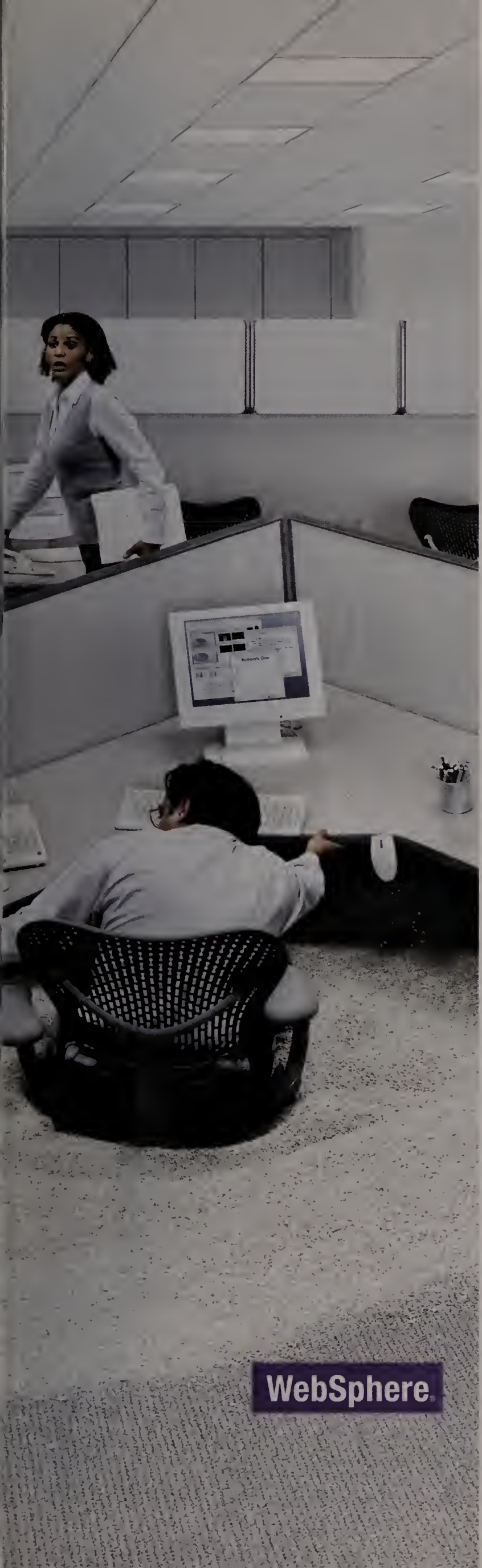

_INFRASTRUCTURE LOG

_DAY 34: This indecision is sinking the business. How do we move to a service oriented architecture? Where do we start? Can we reuse what we have? Can we integrate existing apps like SAP and Oracle?

_Infrastructure quicksand!! We waited too long. I'd throw Gil my tie, but it's a clip-on.

_DAY 37: A lifeline: IBM WebSphere middleware! It's already helped thousands of customers build an SOA. Adapters give us a standardized approach to integrating apps from SAP, Oracle and others. It lets us reuse what we have, saving time and money. And WebSphere even lets us build an SOA at our own pace, so we can deliver new services as needed.

_Oh, great. There's sand in my yogurt.

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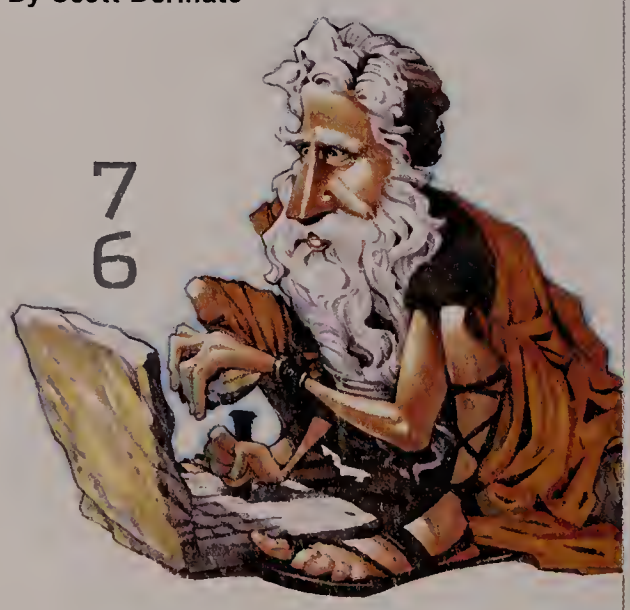

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[SCARY NUMBERS]

When CIOs Report to CFOs

"A few weeks ago, I promised to back up some of my assertions about the CIO-CFO reporting relationship with some numbers from our upcoming 'State of the CIO' survey. The results are more disconcerting than I ever imagined. **Having the CIO report to the CFO destroys value in nearly every possible way."**

Executive Editor Christopher Koch provides a preview of some scary numbers from *CIO*'s "State of the CIO" survey in Koch's IT Strategy.

» blogs.cio.com

[FRAUD]

HOLD THE PHONE

Think you know who's on the other end of the line? Are you sure? *CSO* columnist Sarah D. Scalet takes a look at the newest trend in fraud, call spoofing, in her Alarmed security column. She'll make you think twice before you rely on caller ID.

www2.cio.com/research/security/alarmed.html

[STAFFING]

TAKE A LOAD OFF

Senior executives and managers say the workload in their department is too heavy. Columnist Chuck Martin takes a look at why staffers are scrambling, and how you can beat the burnout. And readers are wearing out their keyboards to weigh in.

www.cio.com/leadership/leadership/martin/column.html?ID=25981

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[NEWS]

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A Paradox That Gets CIOs

It'll be a neat trick if you can drive innovation and growth while tightly managing costs, compliance and risk

The effects of the networked economy continue to ripple across our broad business seas, rocking the boats of industry after industry. There's been a dramatic increase in the number of companies Standard & Poor's calls "high risk," from 35 percent in 1985 to 73 percent today (based on a study by S&P and Mercer Management Consultants, as reported in a recent article in *Fortune* magazine).

What's going on? Change. Profound change. New technologies are altering the way companies do business, eliminating geographic constraints and digitizing more and more products. It's hard to find a company these days with a business model that *isn't* being disrupted or an executive who *isn't* under pressure to innovate his or her way through these turbulent waters.

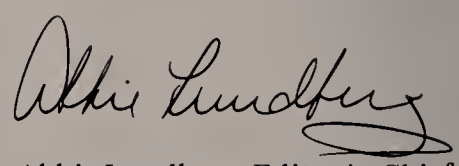
Managing costs, risks, security and regulatory compliance while driving innovation and growth is like patting your head and rubbing your belly at the same time.

Case in point: Microsoft is about to release what its COO, Kevin Turner, calls the "biggest R&D investment in the history of business." Yet much of Microsoft's attention is focused elsewhere. As Senior Writer Ben Worthen writes in "Beyond Vista" on Page 48, "Vista isn't a part of the software as a service trend, and all the pomp and circumstance surrounding its release masks a growing concern inside the company about what the IT world will look like five years from now. Software as a service is a threat unlike any it has faced before, and Microsoft must make dramatic changes if it wants to remain the most important technology company in the world."

The conundrum for CIOs, whether their business is technology or finance, media or retail, is that this imperative to change is happening in a radically networked world in which risks multiply exponentially. One of my favorite questions in our annual "State of the CIO" survey is, "In what way will IT have the greatest impact on your business in the year ahead?" I've seen a sneak preview of this year's results (full coverage will appear in our Jan. 1 issue), and they paint a portrait of competing demands: Innovate and grow, but be very buttoned down when it comes to costs, risks, security and regulatory compliance. Managing these while driving innovation and growth is like patting your head and rubbing your belly at the same time. Not everyone will be able to pull it off.

Gartner CEO Gene Hall claims that the number of CIOs getting fired is on the rise because "many CEOs believe that their CIO is [too] cost-focused and not capable of contributing to growth—and they need IT to contribute to growth." This is ironic at best (the last backlash was over IT spending too much); at worst it's a flagrant cop-out on the part of CEOs, many of whom still fail to take ownership of and engage with their CIOs on their company's technology agenda.

Finger-pointing aside, it will be no mean feat for organizations to achieve simultaneously what are some pretty incongruous goals. If you've found a way past the innovation-control paradox, let other readers know by commenting on the online version of this column at *www.cio.com/111506*.



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When it's not all about the numbers

It always excites me when I hear of all the different ways CIOs are using technology either to innovate or to reshape their businesses. Save a couple million, make a couple million—that's what you tell me almost on a daily basis. All of these efforts should be applauded, and it's our job at *CIO* to report on your successes and failures as you do the heavy lifting of business transformation.

But, I have to be honest with you: Nothing compares to what I learned a few weeks ago on a visit to The Children's Hospital of Philadelphia. CHOP is one of the preeminent pediatric hospitals in the nation. Its business is helping sick children get well, and it's impossible to assign ROI and TCO metrics to that kind of value proposition.

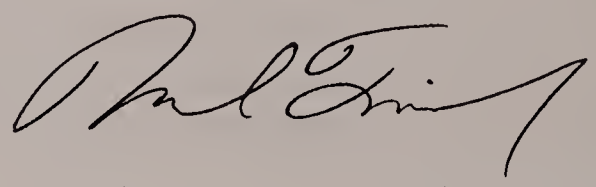
I was there because I had heard of a program in which CHOP installed thin-client computers in every room in the oncology ward. Tim Conners, manager of desktop engineering; John Donohue, health system director of technology solutions; Ellen M. Tracy, director of oncology and radiology nursing; and Charlie Enicks, senior VP and CIO, made the decision.

And it was based on care, not cost.

When a kid is stuck in a room fighting for his life, there's only so much TV he can watch and so many books he can read. But a computer can help him explore the world, study his disease, communicate with friends, play games, do homework, connect with society. Can you determine the ROI of enabling these sick children to dream and to escape the daily grind of battling cancer? It's big. That's enough analysis.

It's easy to get caught up in numbers. Bits, bytes, speeds, feeds, ROI, TCO, balanced budgets. It's your job as CIOs to understand these metrics. But on that day at CHOP, it was refreshing to forget the numbers and see sick children smiling—all because of a computer.

To me, that's truly transformational.



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EDITED BY LAURIANNE McLAUGHLIN | NEW * HOT * UNEXPECTED

Mexico: Not Just for Spring Break Anymore

OUTSOURCING For most people, outsourcing to Mexico still conjures up images of maquiladoras, the foreign-owned factories just across the border that import raw materials duty-free and export the finished products around the world for cheap. But the Mexican government wants to change that. Three years ago, the Ministry of the Economy partnered with the Mexican academic community and public sector to create the Program for the Development of the Software Industry (Prosoft), to develop Mexico's IT sector. In the last year, they've redoubled their efforts to publicize IT and business process outsourcing (BPO) offerings.

Mexico can never be another India, says Jesús Orta Martínez, the ministry's director general of digital economy. You can't argue with the numbers: There are only 107 million people in Mexico, which generates 65,000 IT professionals annually, according to Martinez. Mexico has more than 2,000 IT companies but just three Capability Maturity Model (CMM) Level 5 providers (the Software Engineering Institute's best ranking for software development processes) and another seven assessed at Levels 3 and 4.

So Mexico is promoting its differences. The number one selling point? Proximity. Sure, half the CMM Level 5 development shops are located in India, but time differences can make coordina- *Continued on Page 20*

New Cybersecurity Chief Targets Bureaucracy

SECURITY Greg Garcia, the recently named head of cybersecurity at the U.S. Department of Homeland Security, is an impatient man when it comes to bureaucracy. That may be a good thing.

Those who know Garcia, a former IT security policy expert at the Information Technology Association of America, a trade group in Washington, D.C., say he has little patience for the slow Washington process of nonstop meetings to discuss process, without making hard decisions. "Greg has a low tolerance for chatting with no action," says Harris Miller, a former Information Technology Association of America president. "He's very much a person who believes in setting agendas and moving forward on them."

This may be just what DHS needs. In September, DHS released the nonclassified report on a tabletop exercise it conducted in February called Cyber Storm, in which it staged a mock cyberattack on the IT systems that support the nation's energy and transportation sectors. While DHS officials declared the exercise a success, security experts criticized it, saying DHS has yet to establish some of the most basic elements in a national cybersecurity plan, such as who supervises specific lines of communication. (See "Cyber Storm Warning," *www.csoonline.com/read/110106*.)

If 45-year-old Garcia, whose formal title is assistant secretary for cybersecurity and telecommunications, seeks to pick up the pace, he has some built-in advantages that his three predecessors (Howard Schmidt, Richard Clark and Amit Yoran) lacked. The position has been elevated to an assistant secretary, reporting directly to George Foresman, under secretary for preparedness, and Garcia has a deep list of private-sector and congressional contacts. Watch for Garcia to try to establish metrics on how well the government is doing in cybersecurity, much as the financial sector rates its readiness for cyber attacks, Miller says.

–Allan Holmes, with Sarah D. Scalet

PHOTO BY ALEX BRAMWELL

Laser Breakthrough to Supercharge PC Speeds

PROCESSORS Researchers from Intel and the University of California, Santa Barbara, have found a way to build low-cost "laser chips" that could eventually shuttle data around PCs at much higher speeds than today's copper wire interconnects.

The researchers combined the properties of a compound semiconductor material called indium phosphide, which emits light constantly, and silicon, which can be used to amplify and direct that light. They sandwiched the materials together to create a single device that can be manufactured using standard chip-making techniques.

The breakthrough is significant: It could help the interconnect technologies that carry data between components in PCs and servers to keep pace with the rapid advances in processing power of the chips themselves, the researchers say.

"This could bring low-cost, terabit-level optical 'data pipes' inside future computers and help make possible a new era of high-performance computing applications," says Mario Paniccia, director of Intel's Photonics Technology Lab.

The work may be several years away from commercialization, but the researchers expect eventually to be able to put dozens or even hundreds of lasers on a single chip.

Indium phosphide is already widely used to make lasers for fiber-optic networks, but the cost of assembling and aligning the lasers makes them too expensive for the high-volume PC business. Silicon, on the other hand, can amplify and control light and could be used more affordably but is not an efficient generator of light itself.

The researchers figured out a way to combine the two materials to build a hybrid silicon laser that can be manufactured using Intel's standard manufacturing techniques, to keep costs relatively low. Figuring out the hybrid silicon laser was the last big barrier to using silicon-based optical devices in computers and data centers, the researchers say.

–James Niccolai

Tech Jobs Picture Brightens

The U.S. tech industry added more than 140,000 jobs between January and June of 2006—almost double the number from the same period in 2005. This represents the best six months of tech job growth since 2001.

SOURCE: AeA (formerly the American Electronics Association)

Mexico Outsourcing

Continued from Page 19

tion—and travel—tricky. And Mexican BPO providers have an edge for the growing U.S. Hispanic market, he says.

Mexico's largest IT services firm, Softtek, posted a 2005 revenue of $140 million and counts GE, HP, and Citigroup as clients. IBM Global Services employs approximately 1,200 developers in Guadalajara and Mexico City in its Application Services México division. Perot Systems is establishing a captive center in Guadalajara, like IBM. "We realized we had all our eggs in the India basket," says Enrique Cortes, director of business process services for Perot, which employs around 6,000 workers in India. After talking to IBM and HP, Cortes concluded Mexico would be a good place to source infrastructure services for American clients because of cultural affinity, time zone compatibility and Nafta, which provides Treaty Nafta (TN) visas for travel back and forth (like H-1B visas, but with no cap). Perot is working with a local provider, Sinapsis, to get the center running by January 2007.

Around 2001, Bill Wood gave it a shot too. Then senior VP of product development at Colorado Medtech, Wood signed a deal with a firm in Enseneda, Mexico, to prototype a proprietary software system. He was impressed with the team's quick dash to proof of concept stage. But in the end, "they underdelivered," Wood says. He brought the project back in-house. To be fair, Wood, now VP of product development for Ping Identity, a Denver-based maker of identity management software, had similar problems in India and now uses Russian IT services provider Luxoft.

Alfonso R. Gonzalez, CIO of Steelscape, a Kalama, Washington, manufacturer of steel coils for construction, has had more success with Neoris, a Miami-based outsourcer with development centers in Mexico and eight other countries. The vendor has handled Steelscape's SAP and .Net development and support at its Monterrey facilities since 2004. Gonzalez likes the provider's responsiveness and pricing. But for large projects, he must often send someone from Washington to assist Neoris, particularly during the requirements and design phases.

–Stephanie Overby

PHOTO BY SHAUN LOWE

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FOLEY SCANDAL LESSONS: **Manage IM Use**

INSTANT MESSAGING The tempest surrounding former Congressman Mark Foley's sexually explicit instant message conversations with minors has turned into a political scandal, while offering a warning for corporate IT groups.

The episode underscores the fact that instant message conversations can be just as damaging as e-mail, says Shawna Swanson, a partner with San Francisco-based law firm Fenwick & West's Employment Practices group. "The big difference between the two, frankly, is people know how to monitor e-mail better than they know how to monitor IMs," Swanson says. "I hear people say that there is no way to monitor IM, but that's actually not the case."

According to a 2006 survey by the American Management Association and the ePolicy Institute, workplace IM is "a recipe for legal, regulatory and security disaster." Ten percent of employees reported sending sexual, romantic or pornographic instant messages and half of these are sent on free instant messaging software rather than company sanctioned tools, according to the survey.

The ePolicy Institute has some tips on how to rein in instant messaging:

» **Assume employees** are using IM. Only 47 percent of employees using free IM tools reported that their companies knew about its use.

» **Survey employees** and test your network to see if employees are using IM clients. Symantec and other vendors make management tools to detect and monitor IM traffic.

» **When you find** IM clients on the network, don't rush to ban them. Employees who see IM as critical to their jobs might revolt. Besides, they'll probably just find a back door to sneak in IM.

» **Set an IM policy** that reflects any regulatory compliance requirements and acceptable use rules. Make it clear that instant messages belong to the employer, not the employee.

» **Make sure** your IM policy is being met. IM management tools, available from vendors such as Akonix, IMlogic and FaceTime, can help log and report on IM traffic and enforce company policy.

–Robert McMillan

Ready for the Holiday Traffic?

E-COMMERCE So online retailers, what's it going to be this holiday season? Another year panicking from November to January over a possible overload of website traffic? Or are you going to get it right and seize your share of the $457 billion worth of retail sales up for grabs this holiday season, according to the National Retail Federation? The stakes are high. According to a recent Harris Interactive survey, 40 percent of online consumers will abandon transactions entirely or turn to competitors upon experiencing problems.

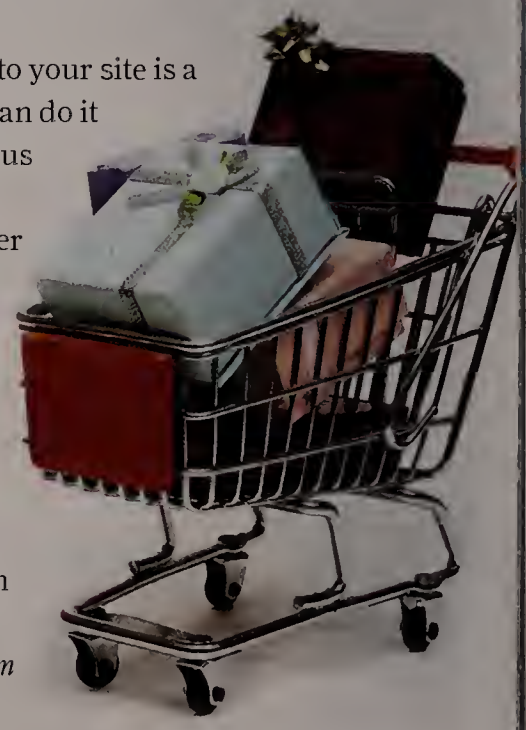
First to-do item: Online retailers should prepare their systems for a 25 percent increase in traffic over last year's, according to Rajib Das, vice president of business development for SkillNet, a retail industry technology consultancy. SkillNet recommends that online retailers conduct a website performance audit to see if the site can handle going from, say, 100,000 visitors a day to 135,000, and to see if the e-commerce applications and back-end interfaces (CRM, inventory, order management) hold on through the spike.

Next up: Das says that while many of the better retailers measure conversion rates (what percentage of consumers who come to a site actually become a customer), as a practice, it has not reached the vast majority of them. More retailers need to focus on improving their conversion rates, he says.

Because the "act of getting people to your site is a costly affair," Das says, "even if you can do it a little better, it can make a humongous change [in increased revenue]."

Another wrinkle is that while newer customer service technologies are enabling more flexible customer experiences (for example, buy online, pick up in the store), the pressure on the back-end IT systems to get this right is even higher. "In a sense, the website is a faceless operation, so customer service is even more of an important factor," Das says.

–Thomas Wailgum



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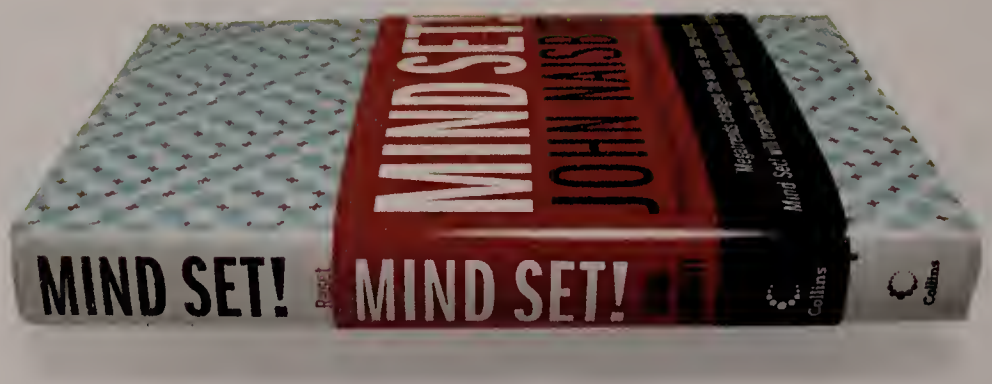

Mind Set! Reset Your Thinking and See the Future
By John Naisbitt
HarperCollins, 2006, $24.95

From the Mind Behind *Megatrends*

BOOK REVIEW Every few years, futurist John Naisbitt collects his observations into a book of emerging trends. *Mind Set!* is the latest in the series that began with the 1982 best-seller *Megatrends*. Continuing the franchise, Naisbitt's new book identifies five trends in culture, politics, economics and technology.

This time, Naisbitt also outlines his process for reaching his conclusions. As one would expect, he reads a lot and travels widely (he currently lives in Vienna and is a faculty member at Nanjing University in China). The key to making predictions, however, is to filter all the information he gathers through 11 "mind-sets" that guide his thinking.

For example, to formulate his prediction that the world economy will be defined in terms of industry-centered domains—like the automotive and pharmaceutical industries—that do business globally, he relies in part on the dictum "See the future as a big picture puzzle." After observing that because of globalization, traditional indicators like gross domestic product provide an incomplete picture of a country's economic activity, Naisbitt identified cross-border, industry-based economic domains as the key elements in the evolving world economy. How those pieces are arranged will determine how growth gets measured, he says. By reshuffling the relevant data, the picture of the world economy will emerge, he predicts.

Naisbitt's principles have a pop-psych feel to them. Mindset No. 4, "Understanding how powerful it is not to be right," reminds us of the chestnut that we must let go of old ways to achieve (pick one) personal, professional or corporate growth. (Naisbitt applies this principle to dogmatic European Union politics, which, he predicts, are a recipe for the continent's economic decline.) However, argues Naisbitt, simplifying how one thinks about the world is the best way make sense of it.

–Elana Varon

30 Books That Can Make You a Better Leader

CAREER A single book might not help you discover your inner leader, but 30 books can change your life. That's the premise behind the Regional Leadership Forum's (RLF) 2007 book list. RLF, a nine-month program of individual work and group sessions presented by the Society for Information Management (SIM), fosters leadership development in part through book discussions. (For the complete RLF reading list, see the online version of this article at *www.cio.com/111506*.ww)

The forum focuses on individual growth, and business intelligence, not technical acumen, says Bob Rouse, director of RLF and professor of computer science at Washington University. Hence the list includes *Two Old Women* by Velma Wallis and Viktor Frankl's *Man's Search for Meaning*.

Reading beyond the business section is a lifelong learning skill that the forum stresses, notes Rouse. Case in point: Since graduating from RLF in 2002, Jim Noga, VP of IT at Massachusetts General Hospital, has given managers books from the updated list each holiday season. RLF adds six new books each cycle. New titles this year include Michael Marquardt's *Leading with Questions*, Patrick Lencioni's *Death by Meeting* and Kazuo Ishiguro's *Never Let Me Go*.

Those who find the list's length daunting may want to follow the lead of Michael Pellegrino, CIO of Fuji Photo Film USA. He read up on speed-reading prior to the forum, which involves six two-day sessions and nearly 8,000 pages of reading.

"I started the program on the first day thinking, 'What am I doing here? I don't know if I can keep up with this work,'" says Pellegrino. "On the last day, I thought, 'This is one of the greatest experiences that I have ever had, and I don't really want it to end.'" So it didn't. Pellegrino and his peers created an extension program, which included several, albeit fewer, books.

–Lauren Capotosto

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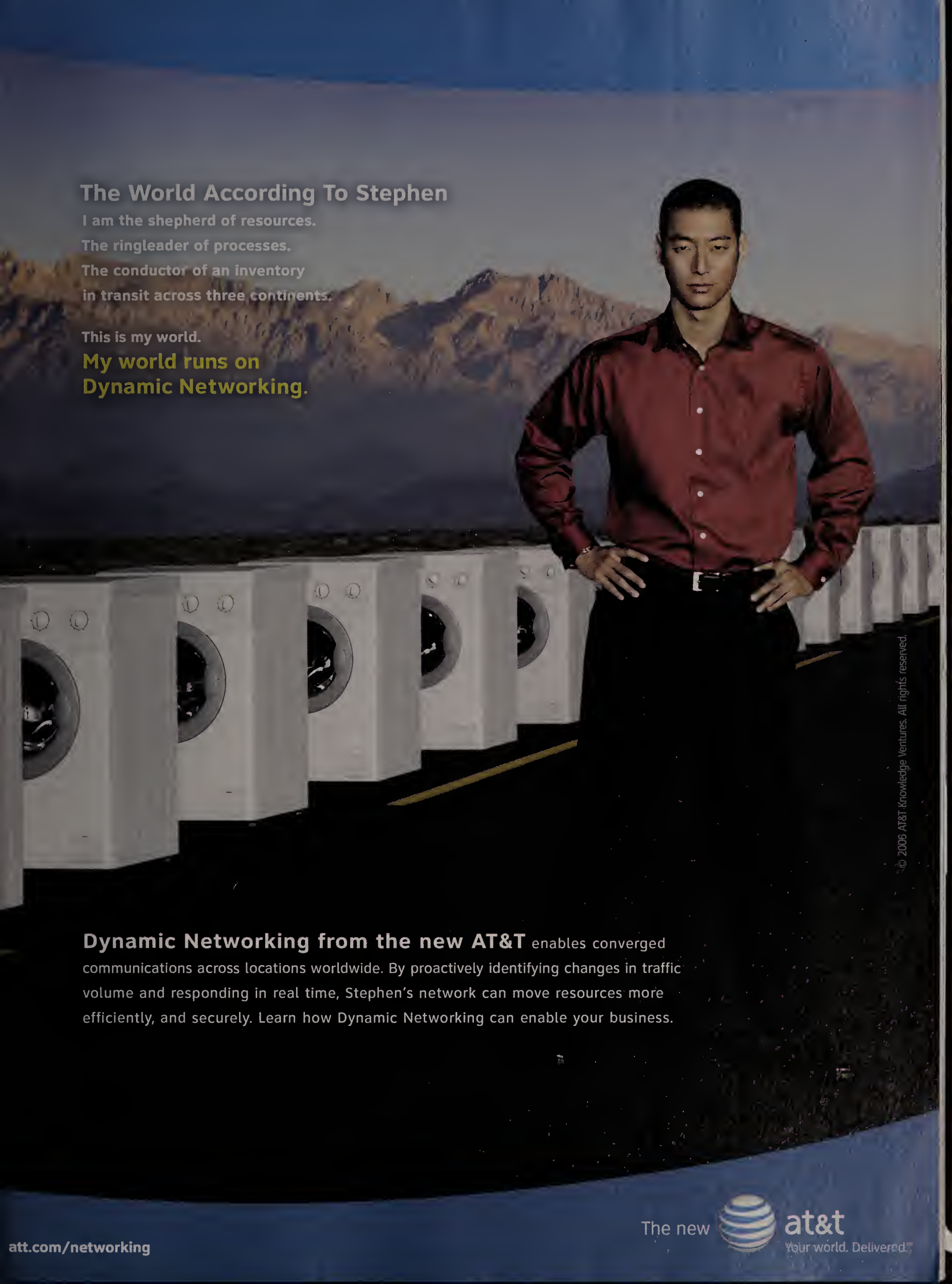

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by the numbers

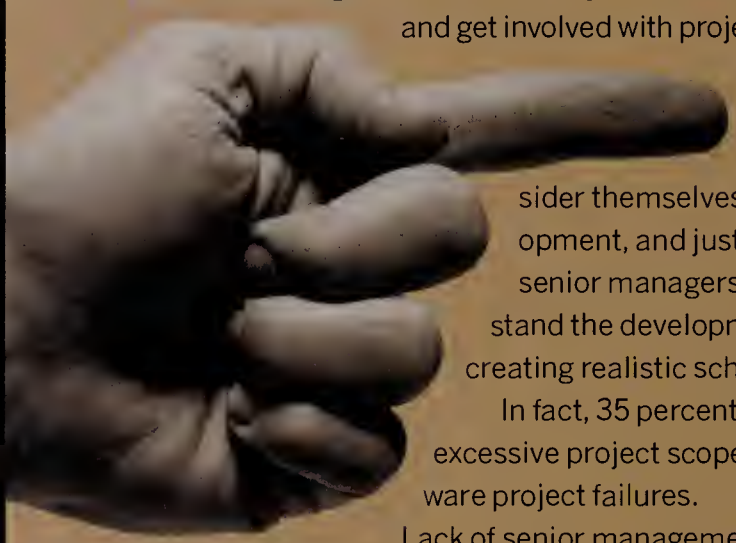
BY DIANN DANIEL

TRENDLINES

Software Development Failures: Who's to Blame?

Senior managers. Here's how they can improve.

Excessive pressure and unrealistic, often arbitrary, deadlines from IT senior management rank as the top reasons software projects fail—and senior managers know it, according to a recent Cutter Consortium survey. So how can senior managers break the cycle? To avoid making bad decisions, they must learn more about the software development process and get involved with project development reviews, Cutter concluded after surveying senior managers and their employees at 100 development organizations.



Just 39 percent of senior managers consider themselves "very knowledgeable" about software development, and just 28 percent of nonsenior managers give their senior managers that rating. Too few senior managers understand the development process, like estimating project costs and creating realistic schedules, according to Cutter.

In fact, 35 percent of respondents named impossible deadlines, excessive project scope or a limited budget as the main reason for software project failures.

Lack of senior management involvement—especially at the right times—fuels unrealistic expectations, Cutter analysts say. In 38 percent of companies responding to Cutter's survey, senior managers just occasionally involve themselves in projects, checking in only for major problems. And just 27 percent take part in project development reviews—a crucial point where problems can be proactively addressed to head off failures, says Cutter Consortium Senior Consultant E.M. Bennatan.

"The whole idea of project management review is creation of opportunity for senior managers to get involved," he says.

Best Practices

Educate senior management. Create (at minimum) a half-day software development course, to be held every quarter. Get buy-in from the business side by emphasizing costs of failed projects and by making software development education a corporate goal.

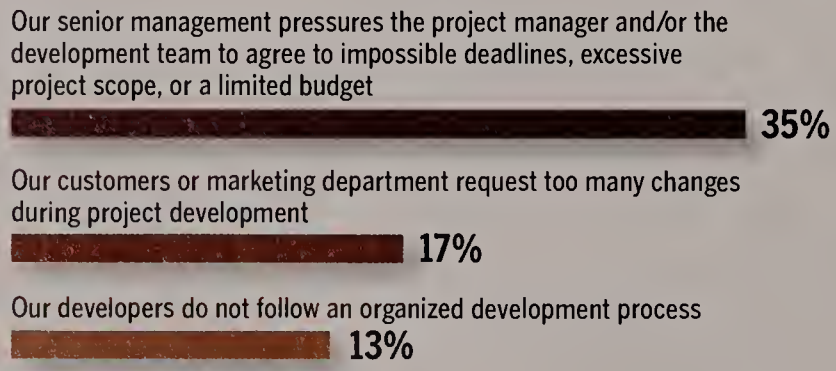
Communicate appropriately. Oversimplifying software development puts you in danger of giving an oversimplified solution. Understand your senior managers' learning and listening styles, and examine how much information is appropriate at each stage.

Create a project disaster plan. Every project should have an early warning system in place, and danger signs should be communicated to all appropriate participants. When a project goes off track, don't be afraid to stop the project, define minimum goals, rebuild the team and revise the plan.

Software Project Killers

Unrealistic Deadlines

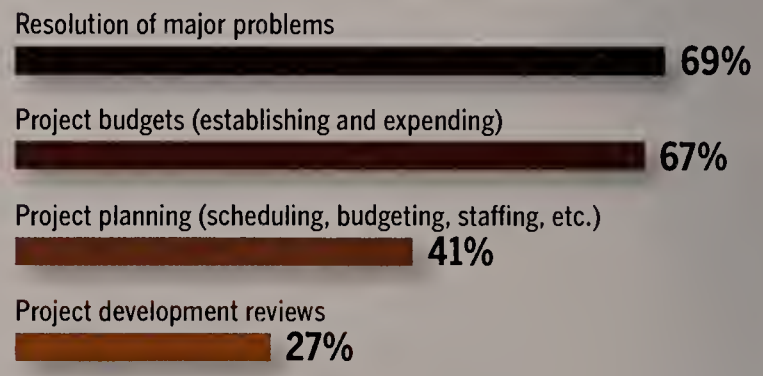
Poorly conceived project time frames top the reasons why development efforts fail.



SOURCE: Cutter Consortium

Absentee Oversight

Too few senior managers get actively involved at the crucial project development review stage. Most participate in:



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RIGHT NOW
TECHNOLOGIES

technology

Edited by Laurianne McLaughlin
lmclaughlin@cio.com

Voice-over-IP projects often stall during or after pilot testing. Here's hands-on advice from CIOs who kept their projects running.

Don't Let VoIP Throw You

BY MICHAEL FITZGERALD

VOIP | Long before the Vonage IPO turned into the year's worst use of investor money, CIOs had started feeling chilly about voice over IP.

In fact, after 2005 studies showed that 32 percent of American firms were piloting VoIP, a Forrester Research survey in August 2006 showed that adoption rates were flat from the same period a year earlier. Forrester Research analyst Lisa Pierce declares that enterprise VoIP deployments in the United States "have stalled."

The reasons why will sound familiar to most CIOs: organizational deadweight, technology fear, uncertainty and doubt, and competing demands on network upgrading funds. But you can get through a VoIP pilot without stalling. We talked to CIOs who've done it, to look at some common and unexpected trouble spots, plus get advice on how to avoid or conquer them.

Unexpected Tech Troubles

The problem: Can you manage a VoIP network with your existing staff once it's in place?
The answer: Be prepared for a few glitches, and get hands-on wisdom during install.
VoIP is supposed to make the phone system better, not make it stop ringing. But one early side effect of the way a new VoIP system had been implemented at Serta Mattress was causing phones

ILLUSTRATION BY HADLEY HOOPER

to stop ringing for as long as 20 minutes at some of its factories.

For the not-so-sleepy mattress maker, VoIP emerged as a potential answer to the problem of rapid growth during the 1990s. Ambitious and judicious management took a mattress factory with a Serta license and built it up to the point where it acquired Serta itself: By 2003, the company had gone from three facilities to 23. Each of them had a telephone system (a PBX, in phone parlance), and each a maintenance contract, eating up between $500 and $1,000 per month.

Donna Zett, CIO at Serta, thought VoIP would give her a way to run a single PBX system, based at company headquarters in Hoffman Estates, Ill. That would save the company a bundle on maintenance, for starters (its VoIP system now costs it about $2,000 a month in maintenance). And since an internal study showed that 60 percent of its long-distance calls were between facilities, VoIP promised Serta savings on phone bills too.

Still, Zett trod carefully. She put three vendors—Cisco, Avaya and Sphere Communications—through their paces. That included access to reference customers with network and corporate structures similar to those of Serta. She even went to visit six of those reference customers. Serta chose Sphere, and spent about $150,000 and four months rolling out the VoIP system. Zett had her own staff work on the installation project, to make sure it could handle the new technology.

That install experience proved vital after Serta had moved past the pilot stage and implemented VoIP in several of its locations. Zett had opted to use the wide area network to do routine Sphere software upgrades. But after a few of the sites had moved to VoIP, it turned out that slow server response time could temporarily suspend phone service.

"We could lose phone operations for 15 or 20 minutes," she says. "And that's way too long."

Because they'd installed the system, Zett and her staff knew they had several ways to fix this problem, the easiest of which was to schedule the updates at night. So they decided to install local upgrade servers (ordinary PC blade servers) that download updates only at prearranged times, usually at night, which allows for a much quicker update to the hub in the local facility. Serta's IT team also created the option of having local operators at each plant, instead of routing all calls through headquarters.

Zett's been happy with VoIP, and especially happy that she had her staff do the rollout. "Doing our own rollout meant we learned a great, great deal about what we liked and didn't like—we're not dependent on our vendor," she says.

> "Doing our own rollout meant we learned a great, great deal about what we liked and didn't like—we're not dependent on our vendor."
>
> –Donna Zett, CIO, Serta

Beat the Vendor Blues

The problem: What do you do when your vendor can't deliver as promised?

The answer: Know when to pull the plug on one vendor, and know what questions to ask the replacement.

Saving mad money on telephone costs is what makes most CIOs check out VoIP. That's what got the interest of Marty Resnick, director of technology operations at Norman's Nursery, a $65 million nursery wholesaler in San Gabriel, Calif. The cost savings are what kept him going through a

Top 3 VoIP Troublemakers

What's most likely to slow down your VoIP project, or even leave it in pilot testing never-never land? Forrester Research's Lisa Pierce cites three big culprits:

1. Organizational Mess

VoIP works across wide area and local area networks, which many companies handle through different budgets and departments, when IT and telecom groups are separate.

TIP: Companies may have to reorganize internally before developing a companywide VoIP strategy.

2. Network Traffic Trouble

It's not unusual for performance problems to creep in as you add VoIP users or sites. "The most important decision anyone who is considering implementing VoIP can make is how they will 'live' with it after the installation is completed," Pierce says.

TIP: Make sure you have comprehensive VoIP monitoring and management tools, and staff expertise before rollout. If you can't afford these, consider managed or hosted services, she advises.

3. Tough Business Case

Moving to VoIP typically means network upgrades. But VoIP may not be top on the list of networking upgrades, especially with telecom budgets growing more slowly than IT budgets. Meanwhile, conventional long-distance rates are plummeting, undercutting what has been VoIP's biggest advantage.

TIP: Piggybacking on a network redesign may help. Keep a close eye on the VoIP dollars and sense as phone rates change. *–M.F.*

_INFRASTRUCTURE LOG

_DAY 22: We've taken "add an app, add a server" to the next level: complete insanity. The servers require constant attention. Our fingers are cramping from rebooting. Haven't left the office in days.

_DAY 23: "Insane" doesn't begin to describe it. Around-the-clock maintenance is turning our staff into an army of zombies. Hey, even the undead get time and a half.

_I don't want to spend another night in the server room. I want control. I want an i.

"Nightmare on IT Street" technology pilot, which he hopes has no sequel.

Norman's Nursery has three facilities, none closer to each other than about 100 miles. Its phone bills in 2004 were running close to $6,000 a month, much of the cost due to calls among its three facilities. The company couldn't transfer calls between facilities, and none of its employees had their own extensions. Resnick thought VoIP should fix that problem.

He had a laundry list of other things he'd like in a new phone system as well: a unified paging system, message boxes that combined voice mail and Outlook e-mail, and faxing from Outlook. He went to his telecom provider, SBC, which recommended a specific Nortel BCM (Business Communications Manager) and a third-party systems integrator to implement it.

Resnick wasn't very happy about being assigned to a third-party integrator, but he trusted that SBC knew what it was doing. He got a quote of about $135,000 for the system and its implementation.

Things started to go wrong quickly. For starters, the third-party integrator seemed unfamiliar with the system, spending a good deal of time reading documentation. Worse, the system SBC had recommended didn't actually have all the features Resnick wanted. Those it did have didn't necessarily work. For example, the receptionist's console was built around software from yet another third party, and it crashed constantly. Suddenly, Resnick found his two-month implementation limping into month seven.

As an added insult, he couldn't even call someone at SBC to yell at them. SBC was in the process of merging with AT&T, and the people he knew had been reorganized into different jobs and in some cases had left the company entirely.

Resnick might have washed his hands of VoIP, but the pilot did do one important job right: It let the company transfer calls over the data network, which almost immediately led to savings on the phone bill. Costs fell from $5,000 to slightly more than $1,000 per month. But he was still paying SBC money for features he'd been promised but hadn't received. So he went looking for a different VoIP system.

The key now: He had learned how to probe vendor answers. For instance, he knew to ask if fax integration meant his users could print faxes from their desktops. He knew to ask whether a feature was built-in or came from a third-party company. And he knew to get documentation proving functionality.

The pilot meant he had laid the foundation for VoIP. He'd assigned all his extensions and direct-dial-in numbers, and had installed a PRI (primary rate interface) line, which accommodates voice and data and allows both caller ID and direct-dial-in functionality on one T1 line, functionality you can't get on a regular T1 line. He had also trained users on VoIP concepts.

That meant that in February 2005, when he brought in a system from Shoretel, a VoIP startup, things went smoothly. His new system was up and running in less than a month, with almost all the features he had wanted. Better yet, it cost him less than SBC's approach: about $105,000. And he was able to ditch the SBC system.

Resnick declines to point fingers at SBC, saying he was too quick to accept it when SBC told him VoIP is a "piece of cake." Second time through, he made sure to communicate what he needed and make sure he understood the limitations of the system.

34% of companies are evaluating or piloting VoIP, 29% have no plans, 21% are rolling out, and 14% are fully deployed.

Source: Forrester Research, Aug. 2006 study of 366 North American companies with domestic-only networks

Manage Competing Priorities

The problem: How do you roll out VoIP when top management has other priorities, and when you need several third-party partners to go along with you?

The answer: Realize VoIP pilots will take more time than most other pilot tests.

Mike Benson wishes he were done with the VoIP installation going on at his company's 30 call centers. Benson, executive vice president and CIO of DirecTV, hoped to be saving millions of dollars a month in phone bills with VoIP by mid-2006. Instead, he's still working toward a second-quarter 2007 finish date.

Benson wants VoIP because it costs DirecTV 1 to 2 cents to transfer a call from one call center to another. That doesn't sound like much money until you realize that DirecTV spends about $60 million a year on telecom, about 75 percent of which Benson estimates comes from connecting calls between centers. VoIP could eliminate those transfers, saving DirecTV several million dollars a month on its phone bill.

The good news when Benson's pilot began: DirecTV had been planning an upgrade to

Norman's Nursery was still paying SBC money for features that it had been promised, but still hadn't received. So CIO Marty Resnick went looking for a different VoIP system.

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MPLS (multiprotocol label switching) networking infrastructure and was upgrading its Avaya equipment already. So VoIP's cost would be inconsequential.

Benson piloted VoIP in one of the company-owned centers and found that it was "pretty straightforward" to implement. VoIP did require making sure switches at the center and outside of the network were IP-capable and had appropriate software in them.

The bad news: Benson controlled only four of the call centers DirecTV uses. The other 26 were outsourced to three companies, primarily Convergys. Planning talks with his third-party providers went slowly. Convergys was also moving to an MPLS network, and the two companies planned similar network architectures and used similar equipment. But that wasn't true for his other providers, which didn't necessarily have the same priorities for IT, either. And Benson would get no cost savings if VoIP weren't in place at both ends of the network.

Today, Benson has learned some lessons about managing the multiple vendor issues. While it does take time to nudge a service provider in a direction it might not want to go, there are things that help, Benson says. In his case, having one large service provider and two smaller ones meant he could play them off against each other, to a point. The smaller providers wanted to get more of his business, so they acted more cooperative, which put pressure on Convergys to come around. (It helped that Convergys started to miss its service-level targets, which meant Benson could legitimately threaten to pull contracts.)

Another lesson learned: VoIP may be at the top of your to-do list, but it's probably not at the top of your organization's. Chances are, a CIO will be pulled in unexpected directions during a VoIP pilot. Benson, who of course has to respond to other, competing needs from within DirecTV, is no exception. If customer service wants a new call center built, Benson needs to pull people from the VoIP project for the duration of the call center project. This year he's had to build a new call center for DirecTV and help his third-party providers open two other call centers.

Such dilemmas and diversions don't dull Benson's ardor for what he thinks will be hefty telecom savings. His centers stand completed, and he thinks by the end of 2007 all the third-party call centers will also be done, though since some of DirecTV's outsourced call centers use Nortel equipment, DirecTV still needs to test IP calls between Avaya equipment and Nortel equipment.

Once this project is done, he's got another VoIP pilot in mind, examining IP-enabled phones. He's learned, though, to expect significantly longer planning time for VoIP projects, especially in a company where keeping the phones ringing is paramount.

Take the Cake

Despite the issues that come with VoIP, Forrester's Pierce says companies do want to adopt it. "The percentage of companies that believe they will stay on old technology indefinitely goes down and down and down," Pierce says. For smart rollouts, she recommends the "chocolate layer-cake" approach.

By that, she means implementing VoIP in phases. Use new sites or places where aging equipment or a growing workforce create opportunities for upgrading equipment. That gives staffs a chance to gain experience with what remains an emerging technology.

And makes it more likely that if the phones don't ring, you'll know why. CIO

Michael Fitzgerald (*michael@mffitzgerald.com*) is a freelance writer based in Millis, Mass. To comment on this story, go to the online version at *www.cio.com/111506*.

Measuring VoIP's ROI

See **"THE ROI OF VOIP"** for more advice on getting the most from VoIP projects, at **www.cio.com/archive/060105/forum.html**.

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VoIP Disaster Plans: Don't Skimp

REPLACING THE telephone company with VoIP comes with one major potential problem for companies: The Internet is simply not as reliable as landline telephones. "There are going to be problems, and times when things go down," says Will Stofega, an analyst at IDC (a sister company to *CIO*'s publisher). "How you react to it is critical."

Especially if you are a CIO at a mid-market or smaller company, you may be pressed for disaster-planning resources, but don't skimp, say CIOs who've been there. Marty Resnick, director of technology operations at Norman's Nursery, made disaster recovery planning central to his VoIP planning. He made sure that there were still working analog lines at each facility, in case of network and power outages. He also made sure that if a single VoIP server crashed, the phones would roll over to a server at another location.

IDC's Stofega gives these tips for other CIOs planning for the worst while working toward the best:

- After network testing, upgrade routing software where necessary and make sure it's as bulletproof as can be.
- Consider setting up a virtualized LAN or having a backup location for VoIP.
- Bolster security safeguards to fend off denial-of-service attacks and other Internet-clogging events.
- Write a careful plan for an actual emergency—including who should be called, who should be onsite and who should call your provider.

–M.F.

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Mike Hugos

Ticktock, Ticktock

The best leaders know not only *what* to do, but *when* to do it. That includes choosing the right time and place to introduce new technology.

During the past 15 years I have participated in the rollouts of three technologies that fundamentally changed the IT infrastructure of the companies that employed them: client/server architecture, Web-enabled e-business and wireless mobile devices. In the process I've developed strong analytical skills that I use to investigate the situations and circumstances that lend themselves to the introduction of new technologies. I've also developed an intuitive sense about these same things that complements my analytical side.

Leading a company through an IT-driven transformation requires knowing more than what a technology is capable of. The tricky part is knowing when the right time is to introduce it and where in the organization to implement it in order to demonstrate its value. My analytical side is good at figuring out when something should be done. Then, based on this analysis, I develop a gut feeling for where it should be done.

Making the right call about when and where to introduce new technology is one of the ways you solidify your position as a leader in your company. I use two indicators to determine when the time is right. And I determine where to introduce a new technology by using what I call the "operational art."

The Right Time to Act

The first indicator that the time is right to introduce a new technology is when you see clear evidence that it can deliver significant returns. If it's a reduction in operating costs you're targeting, for example, you would look for more than incremental savings. Because there is always risk associated with implementing new technology as well as time and money

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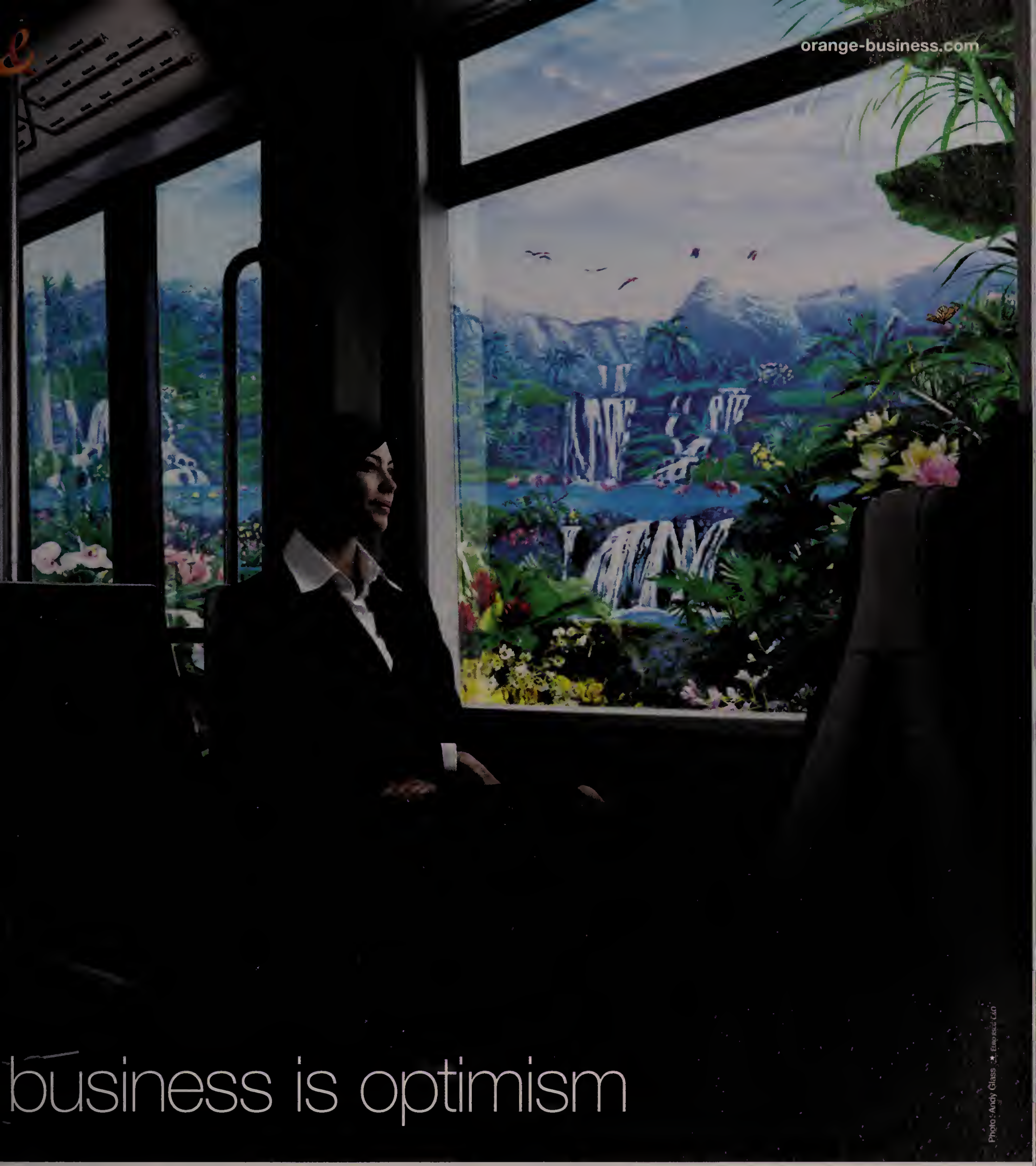

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involved in installing and learning to use it, whatever benefits you achieve must exceed the risk potential and cover the deployment costs. The second indicator of when the time is right for a new technology is that it provides your company with a new way to do business and generate revenue.

An example of this is Web-enabled e-business technology, which offered companies the potential to increase sales without hiring more salespeople or building new physical locations. But a lot of companies got their timing wrong when they decided to start selling online, because most customers were not ready to actually use the technology. It wasn't until several years after many companies had installed e-commerce systems that they began to generate significant revenue; companies spent large amounts of money before it was possible to realize much new revenue.

Making the right call about when and where to introduce new technology is one of the ways you solidify your position as a leader in your company.

Most companies don't have the appetite to carry the risk of an unproven technology for long. As a leader, it's critical that you know whether your company is one of them. It may be central to your company's business model to be a first mover or a technology innovator; in that case, you'll time your investment early. But if your company is happier being a follower, it's better to wait until you have clear proof that a new technology not only can but actually will deliver the expected benefits quickly.

The Right Place to Start

Once you've determined the time is right to introduce a new technology, your next step is to decide where in your organization is the best place to use it. This requires you to understand the operating model of your company and how it uses technology to support those operations. Understand what operations will benefit the most from a new technology and then weigh the risks involved with the introduction of this technology against its potential benefits. Select an operation where the risk is manageable and where there will also be big rewards.

This selection process is not entirely an analytical one. There is also a strong element of intuition involved, based on your assessment of potential impacts that a new technology will have on the operations where it could be used. This combination of analysis and intuition is what makes up the operational art. It's the ability to know where a tactical move (such as introducing new technology) will produce a strategic result (such as the realization of significant new revenue or cost reductions).

More About Leadership

Mike Hugos writes about leading IT globally in his blog, **DOING BUSINESS IN REAL TIME**. Find it online at **blogs.cio.com**.

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I employed this operational art when I introduced the BlackBerry into my company. I implemented it first with the company's national account sales team instead of providing it to my own IT staff or other internal people. The vice president of sales said his people could use them to increase sales. This would have a bigger impact on our company than would be gained by providing it to our internal staff to increase their productivity.

Plenty of people in the company wanted this technology, but as the IT leader, I had to make the call. I figured the sales team was the most motivated to use it productively instead of fussing over its shortcomings. The first generation of these units had plenty of limitations. They had low-resolution screens. It was cumbersome to open and scroll through e-mails. As phones they were bulkier than cell phones. I felt that the internal staff would be more prone to fixate on these limitations, and as a result, the project wouldn't generate the returns I knew were needed to prove the concept. The salespeople were highly motivated to overlook the limitations and exploit the opportunity the technology provided. They could use it to stay closer to customers and thus earn more money for the company.

The likelihood of success made the BlackBerry project worth the risk, and the returns more than covered the cost of installing and learning how to use and support the technology. Once we had moved up the learning curve and the devices had improved, we rolled it out to my own IT staff and other internal users.

Winning CIOs make use of their analytical skills to see when a new technology has promise. They understand how their companies make money and what the cost factors are in their companies' operating models. Then they develop their practice of the operational art—that blend of business knowledge, street smarts and technical savvy—to determine where to best introduce new technology. This is how they guide their companies through the process of selecting and deploying the latest technologies. CIOs who learn to excel at this become indispensable players, and they become leaders in the transformation of their organizations. CIO

Mike Hugos is a partner in AgiLinks, a software company specializing in agility training and the development of agile supply chains. He is a former CIO of Network Services and author of *Essentials of Supply Chain Management*. He can be reached at *mhugos@yahoo.com*. To comment on this article, visit the online version at *www.cio.com/111506*.

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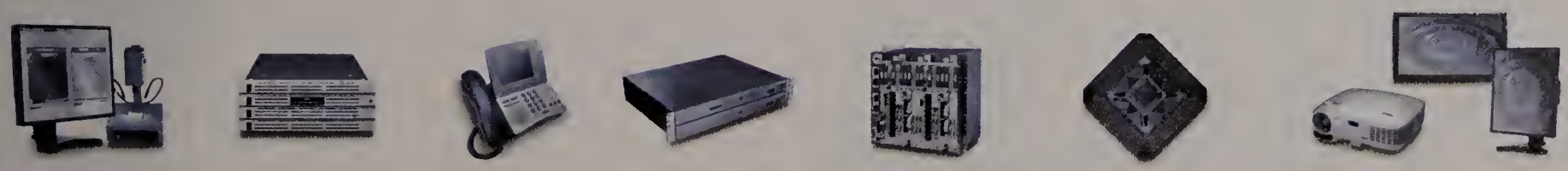

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Michael Schrage

Are You in Control?

Innovation demands discipline as much as it requires freedom

"Embrace change" is one of those awful, managerially correct Hallmark aphorisms celebrated in corporate-speak PowerPoint propaganda. The Give Change a Hug crowd swears that successful change management requires welcoming arms and open minds. They're wrong. Skepticism is best practice.

Enterprise change hugging should be done with the same level of care as swimming with sharks or playing with porcupines: It's going to hurt no matter what you do. Change management is pain management (see "The New Science of Change" at *www.cio.com/091506*). Tiny process nicks and subtle service cuts can lead to organizational inflammation and septic shock. But, hey, no pain, no gain, right?

IT's accelerated innovation rate has spawned an enormous body of change management literature for CIOs. Almost all of it addresses how to turn change management into a reliable, robust and cost-effective process. Change is not an event. Change management—like pain management—is really process management, and change leadership is really process leadership. That's true for people, systems and apps.

So where does successful process leadership come from? An IT Process Institute study provides compelling if counterintuitive insights that ring disturbingly true. Ordinarily, I dismiss self-reported IT shop surveys as self-serving drivel—for example, "Do you have a formal change management process?" "But of course...doesn't everyone?" "Are you a good boy?" "Yes, Mommy." There's good reason why so many CIOs view quasi-academic IT research with contempt.

This survey was different. Questions were ruthlessly specific and difficult to cheat on. Inconsistent or contradictory

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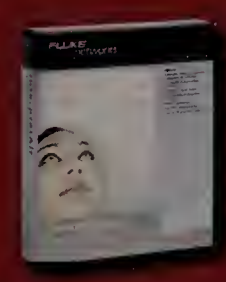

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answers would quickly surface. This survey had baked-in, value-added skepticism. Moreover, the researchers had selected key performance metrics that would quickly separate the weasels from the winners. I bit.

The findings quantified distinctions between IT shops that live for the average and the few that take process leadership seriously. Elite IT performers weren't just two or three times better than median performers—they were seven or eight times better. High performers—roughly 13 percent of the 98 sampled—contributed on average eight times more projects, four and a half times more applications and software, four and a half times more IT services, and seven times more business IT changes. They implemented 14 more changes with half the failure rate.

Top-tier performers weren't innovation huggers. They enforced "process commandments" that constrained wasteful behaviors while reinforcing discipline.

We can quibble over the specifics, but that misses the central point: There were undeniably huge performance differences between the top quartile and the quartiles below. Why? What were the essential ingredients for process leadership?

How the Elite Innovate

There was a simple, powerful and persuasive answer: foundational controls. That is, strict rules that clearly governed how change would be defined, monitored and thus led. Top-tier performers weren't change embracers or innovation huggers. They identified and enforced "process commandments" that constrained wasteful behaviors while reinforcing productive discipline. The researchers had picked a unit of analysis illuminating the core process values of their surveyed firms.

Inspired by MIT's research on lean manufacturing, the IT Process Institute surveys zeroed in on the controls, not the metrics, the elite used to define and assure process discipline. Two controls towered over all others in impact and importance: Do you monitor systems for unauthorized changes? And are there defined consequences for intentional unauthorized changes? No ambiguity or nuance here. The key discriminator between the best and the rest was that elite performers rigorously monitored and punished unauthorized changes. They had situational awareness of change.

The moment I saw this, a myriad of unresolved IT observations crystallized into clarity. What kills us is not our failures of planning, analysis, design, testing and deployment. It's not the work we're supposed to do that undermines our productivity; it's our black market economies of unauthorized changes—no matter how well intentioned or essential. We misunderstand the true enterprise costs of change.

Enterprises reluctant to punish unauthorized change agents guarantee dysfunctional cultures of lax discipline and process subversion. What makes this insight managerially excruciating is the simple truth that, in so many IT organizations, unauthorized fixes are sometimes the best and most important. We've made it OK to scramble top coders to make swarms of not-quite-legit last-minute fixes. Think about that. Then ask, When was the last time your shop audited the impact of unauthorized changes? Take the next step: When was the last time your organization disciplined or dismissed the perpetrator of unauthorized changes?

The survey identified a variety of high-impact controls—call them lean controls—that gave IT leaders greater leverage over their process investments. But the dominant finding was that unauthorized changes were a root cause of underperformance. IT shops that refused to take that shortcut had the best chance to be elite.

A conversation with Gene Kim, one of the lead researchers, revealed that the elite performers didn't treat these controls as behavioral constraints but as platforms for innovation. Controls aren't straightjackets; they can be trampolines. By honoring controls, their developers had greater flexibility in process management because disciplined design and test proved more agile, robust and maintainable than unauthorized change. Their high-performance culture was a high-controls culture. Best practice was synonymous with best controls. Is that true for your firm? How would you know?

The good news, says Kim, is that these controls are straightforward and easy to understand. What's more, elite performers had IT budgets roughly three times larger than median performers. Kim believes that "high performers have continually earned ever increasing budgets because they deliver ever increasing value to the business. The budgets of medium and low performers shrink or are only grudgingly increased by skeptical and suspicious CFOs who see IT managers failing to deliver projects and keep IT services running consistently."

The more I talk with CIOs, the less confident I am that IT appreciates the role of controls in empowering leadership rather than imposing micromanagement. The IT Process Institute's results should provoke some rethinking about basic systems change management assumptions. The great systems software sage Fred Brooks was right: There are no silver bullets. But some ammo delivers far greater bang for the buck than others. CIO

Michael Schrage (*schrage@media.mit.edu*) is codirector of the MIT Media Lab's eMarkets Initiative. Comment on this article at *www.cio.com/111506*.

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Racing to the New

Bringing new technologies to Surprise, Ariz., was not easy. But, of course, change never is. Here are some lessons one CIO learned about innovation. **BY RANDY JACKSON**

We'd been working for about six months on Surprise Connects, a project to bring leading-edge technology into the homes of the citizens of Surprise, Ariz. We were halfway through the first phase, and it had been a particularly discouraging week. I sat down with my boss, Assistant City Manager Kathy Rice, and said, "This innovation stuff is hard." She replied, quoting Tom Hanks in *A League of Their Own*, "Yes, it is. But if it was easy, everybody would do it!"

Surprise, a city of approximately 100,000, is right in the middle of one of the most frenzied building booms in American history. We'd issued 8,000 single-family-home building permits this year and were trying to get our arms around what our citizens wanted in terms of technology services to the home and to envision what they would want in the future.

As in many boom towns, our growth is fueled by developers, home builders and inexpensive land. The good news is that more rooftops bring retail, which brings jobs, which brings industry. The bad news? Most of the builders were constructing homes the same way they always had—entry-level houses with the same architectural features and amenities as thousands of other Phoenix-area homes. Very few were thinking about the home of the future or the technology it required.

The Internet Future

As a government entity, our focus is on creating community, not just building bedrooms. Working with top futurists and a handful of visionary developers, we identified three goals. The first was to lay out a plan that would bring Surprise onto the playing field with the top connected cities in the nation. The

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second was to create increased competition among technology providers. And our third goal was to position homes in Surprise for a future of ultrahigh-speed Internet television, entertainment and mobile communications.

The result of our thinking is one of the most comprehensive municipal technology projects in the nation. Begun in early 2006, the project addresses a broad range of technologies, including broadband, Wi-Fi, digital and HDTV and cellular wireless. By looking at the total technology spectrum, we aren't trying to get a point product (such as Wi-Fi) to meet all our citizens' needs; we're looking for multifaceted solutions.

One of our key projects was to introduce a new technology called Broadband over Power Line (BPL). This was the linchpin in an aggressive set of initiatives that would fulfill our goal of providing citizens with advanced technology in the medium of their choice. BPL was the first major project and it had to work.

But BPL was barely out of the lab. The general public had never heard of it; our city council members and city managers didn't understand it; my staff wondered whether it was ready for prime time; our lawyers weren't sure it was legal. And the amateur radio community was out to kill it.

After meeting with my boss, I asked myself a few questions: Why are leading-edge projects so hard to understand? Why does everyone (or so it seems) fight them? Looking back across my 25-plus years in IT at some of my more innovative initiatives—large and small, successful and failed—I identified some common truths.

Truth No. 1: Innovation means change. Change and innovation walk the same path. They both upset the applecart. Americans love innovation, except when it affects them personally. (For more on the pain of change, see "The Science of Change," *www.cio.com/091506.*) My own staff was fearful that the BPL project would overburden them. But as we learned more about it from the vendor, we saw that our role would be one of oversight rather than hands-on, in-the-trenches installation. But change management is always ongoing.

Truth No. 2: The road will be blocked. Every innovation includes roadblocks. Successful project managers are those who get over, around or through the roadblocks. One of our first roadblocks on the BPL project was our own legal team. They were concerned that no other cities had implemented BPL. Several weeks of meetings and sharing of Federal Communications Commission rulings convinced the lawyers that the risks were manageable.

Another roadblock came from amateur radio operators who feared BPL would interfere with some of their operational frequencies. We met with them and agreed to provide a baseline spectrum analysis to assess interference levels before BPL was rolled out.

Truth No. 3: Innovation means execution. Many visionaries have great dreams, but few can bring those dreams to fruition. When first hearing about BPL, we approached the local electric company to ask if it was researching the technology. It wasn't. Two weeks later, we heard that a third-party provider had a BPL test bed located in a nearby city. A few calls and several inquiries later, we discovered that the electric company had a whole division working with this company on BPL and, apparently, our initial inquiry was to a division unaware that its company was, indeed, working on BPL.

Successful project managers are those who get over, around or through roadblocks.

With a provider identified, we targeted one square mile of our community that was poor and underserved, believing that BPL could connect the residents with educational resources that could help address some of the roots of poverty.

Implementation moved slowly. Then the provider was acquired by another company. BPL implementation is still not complete, but I expect it to finish early next year.

Truth No. 4: Innovation requires marketing. Marketing is not just about selling; it's about convincing stakeholders that a concept will enhance their lives. We have all seen superior products fail because marketing was weak or ineffective.

Marketing must be pursued throughout the entire innovation process. You market the idea in order to bring it to the table. Once the idea is introduced, you market to the stakeholders and customers, and then to the press and the media. After rollout, you must continue marketing to the customers to make sure you're delivering on your promises.

Communication of the BPL vision had its ups and downs. Our senior management team was originally skeptical of the project until we demonstrated to the police, for example, how the new technology could be used to augment both crime surveillance and traffic control.

It's been three months since my conversation with my boss, and, happily, our city council and management still enthusiastically support Surprise Connects. Roadblocks are being eliminated one at a time. It takes persistence. As Bertrand Russell said, "No great achievement is possible without persistence."

And that's the truth. CIO

Randy Jackson is the persistent CIO of the city of Surprise, Ariz. He is also a member of the CIO Executive Council. He can be reached at *randy.jackson@surpriseaz.com*. To comment on this story, go to the online version at *www.cio.com/111506*.

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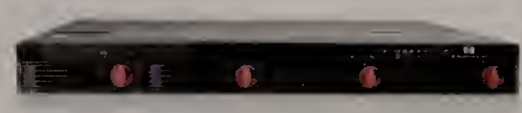

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INSIDE MICROSOFT'S PLAN TO DOMINATE THE WEB 2.0 ENTERPRISE

Every decade or so, a new platform emerges that reduces the cost of running an IT department to such an extent that vendors have no choice but to embrace it or die. In the 1990s, PCs with powerful operating systems spelled the end of mainframe development and ushered in the client/server era. Today, cheap servers and high-speed Internet connections are triggering a move away from traditional desktop PC software and to software as a service, hosted by a third party and delivered over the Internet.

Reader ROI

:: What tools Microsoft believes CIOs will need in a future built on Web services

:: How it plans to provide those tools

:: Where Microsoft will fit into the CIO's IT strategy going forward

No company has as much to lose from this shift as Microsoft, which dominated the client/server era on the strength of its Windows operating system. Microsoft is currently enjoying a moment in the spotlight thanks to Vista (the latest version of Windows), the fruit of five-plus years of development and what Microsoft COO Kevin Turner calls the "biggest R&D investment in the history of Microsoft and arguably the history of business." But Vista isn't a part of the software-as-a-service trend, and all the pomp and circumstance around its release mask a growing concern inside the company, one that comes through in executives' demeanor, internal communi-

BEYOND VISTA

BY BEN WORTHEN

PHOTOGRAPHY BY BRIAN SMALE

Leading Microsoft into the world of software as a service (left to right): CEO **Steve Ballmer**, VP of Server and Tools Marketing **Andy Lees**, and COO **Kevin Turner**

cations and candid conversations about what the IT world will look like five years from now: Software as a service is a threat unlike any the company has faced before, and Microsoft must make dramatic changes if it wants to remain the most important technology company in the world.

Microsoft has started to develop a software-as-a-service strategy over the past year. Its initial offerings—Windows Live and Office Live programs—provide Web-based mini-applications. But those services are only a small part of the grand vision that CEO Steve Ballmer, COO Kevin Turner, Chief Software Architect Ray Ozzie and others hope will make Microsoft as indispensable to the Web 2.0 enterprise as it was to the client/server one. In a series of exclusive interviews with *CIO*, Microsoft executives explain that Web-based applications are just the beginning, and that the company's future lies in developing the tools CIOs will need to manage the software-as-a-service environment. "It's easy to whip up a Web app, throw it online, and say it's for businesses," says Ozzie. "But that's a naive view of what CIOs have to go through."

To Microsoft's way of thinking, the Web services world will make a CIO's life messy and difficult. While each software service that a company subscribes to will be cheaper and easier to operate than its client/server counterpart, collectively they will make the enterprise exponentially more complicated, unless CIOs have tools to provision and manage those services as a suite. Microsoft vows to develop those management tools and make them the centerpiece of its enterprise business.

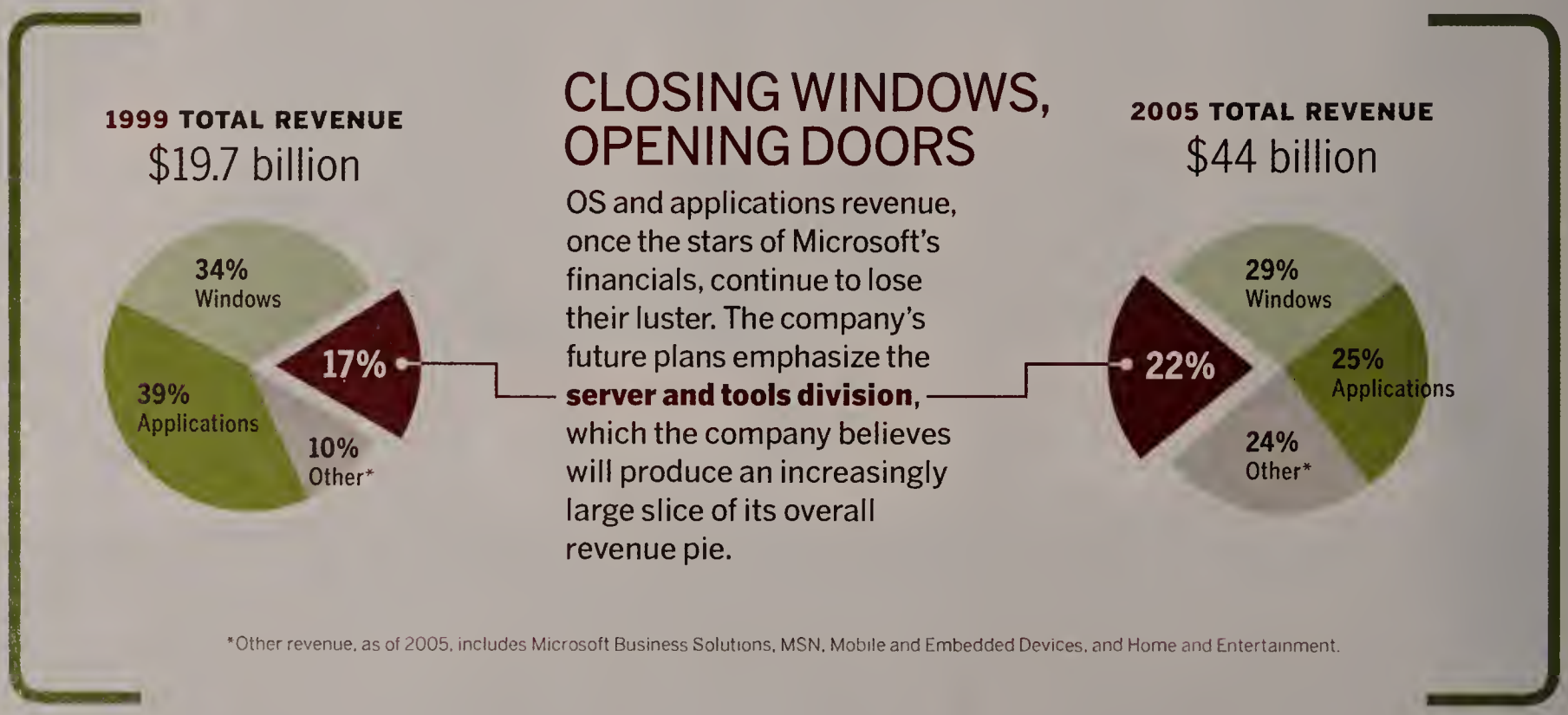
Once those tools are built and deployed, Microsoft says, it won't matter if the applications an IT department supports are Web-based services hosted by an outside party, client/server software hosted internally, or a combination of the two. "[CIOs] have to have a way of provisioning an account, providing the initial connection and user interface," regardless of an application's source, says Ballmer. "At least that's our vision."

But even Ballmer admits that right now, a vision is all it is. Microsoft has accepted and internalized the idea that the software market has shifted ineluctably to services, and the company has seen there a critical opportunity to move forward. But to succeed, analysts say, to change its corporate strategy, identity and DNA, Microsoft must overcome equally critical barriers of technology, strategy and culture.

Where Microsoft Sees Its Opportunity

The widely preached gospel of software as a service says that companies willing to give up the control that comes from running an application internally will save money by not having to maintain and host those applications and, by freeing up those resources, will become more agile and productive. CIOs running services, the gospel goes, don't have to buy and operate farms of servers or trudge from desktop to desktop upgrading software. Instead of a model that encourages long, costly upgrade cycles (the very model upon which Microsoft built its enterprise empire), software as a service allows for small, steady, incremental improvements. That's just one reason it could kill CIOs' appetites for traditional client/server software like Microsoft's.

Furthermore, all a user needs to access a Web-based application is a browser—not a robust operating system tightly integrated with the application. Therefore, unlike in its past battles with Netscape and others, Microsoft cannot rely on its Windows strength to pull its bacon out of the fire. And while Microsoft argues compellingly that it would be foolish not to take advantage of all the processing power a PC offers, the company simultaneously is planning for a future that will rely upon less powerful mobile computing devices and ubiquitous high-speed Internet connections.



The hard truth is that Microsoft has no choice but to confront software as a service. But rather than fighting it, Microsoft looked for an opportunity. And, it says, found one.

"Some people say that [software as a service] is a panacea and that everybody should immediately switch off everything they have and go to this world," says Andy Lees, VP of Microsoft's server and tools marketing, his sarcasm foreshadowing what comes next. "But here's a problem with it: The first service that you have is beautiful, the second service that you have is kind of nice; from then on you have all of the same problems that you had before."

In other words, the CIO still needs to manage a lot of applications. It's just that this time the applications are hosted somewhere else. It's a problem that CIOs are aware of, even if the conventional wisdom (and enthusiasm) surrounding software as a service often ignores it.

"Managing multiple services applications—as well as the things you run yourself—is going to be a challenge," says Joseph Devenuto, CIO of Norton Healthcare, a hospital chain in Kentucky. "You're looking at a world of headaches."

When someone leaves a company (for dramatic purposes let's say a disgruntled accounts payable clerk is fired for gross misconduct), instead of deleting her account from the internal systems, a CIO in a services environment would need to make sure that all the software providers—everything from e-mail to CRM—make the change in their systems, Lees says. Since the disgruntled ex-employee can access the hosted applications through a browser on any device, the risks multiply.

"Quick, get all the IT guys and dial in to those six, seven, 15 different systems that you no longer own," says Lees.

Obviously, you can do that, says Ballmer, but the problem is that doing so will devour a disproportionate amount of time and resources. Microsoft's vision is to come up with products and services that allow CIOs to manage Web applications—as well as internal client/server ones—from a single place. In addition to providing a central place for provisioning, Microsoft, according to Lees, will let CIOs set rules and enforce policies—for example, all orders must be processed by 3:30 in the afternoon. And workflow features will help CIOs automatically manage exceptions, he adds. Today's CIOs "spend all their time configuring and changing and monitoring," Lees says.

"[CIOs] feel like cost and complexity weigh them down," says Ballmer. "I want to make sure we're eliminating that cost and complexity and letting them focus on taking advantage of new innovations and things that can add value to the company."

MID-MARKET
THE BIG UPGRADE

Vista's flexibility should appeal to CIOs with smaller staffs, but its hardware requirements will be tough on their wallets

NOW THAT the marketing onslaught for Microsoft's new Vista operating system has begun, mid-market CIOs will have to present upgrade plans to CEOs—many of whom will probably get their information about Vista from the aforementioned marketing. CIOs who've been beta testing the new OS say you'll like the security improvements, but you'll want to roll out slowly for reasons that include Vista's beefier system requirements.

Past versions of Windows made control over desktop settings an all-or-nothing proposition, but Vista lets CIOs give users more freedom by treating each configurable element differently. CIOs can, for example, give users permission to change the system clock time but prohibit them from loading information through USB drives. This flexibility should particularly appeal to mid-market CIOs with smaller and more time-pressed IT support staffs. So should the security improvements, including a myriad of fixes to XP holes and bugs, and a new feature called Bit Locker, which encrypts local files and makes it harder to access data on a stolen or lost laptop.

In Microsoft's estimation, companies currently standardized on Windows XP can reduce IT labor and support costs $35 per PC by moving to Vista and around $340 per PC by upgrading to all the Vista-related infrastructure products (including firewalls and Active Directory). But it's unlikely mid-market companies will be able to do either because of the new operating system's hardware requirements. Microsoft advises enterprise customers to run Vista on computers with at least 40GB of storage, 1GB of memory and a 1GHz 32- or 64-bit processor—meaning that most mid-market companies will have to buy brand-new computers in order to support it.

"We can't replace every desktop," says Joseph Devenuto, CIO of Norton Healthcare, a $1 billion hospital chain in Kentucky. So Devenuto will upgrade to Vista on his normal technology refresh cycle, which covers about 25 percent of his 5,000 machines a year. Microsoft's Brad Goldberg, a general manager in the Windows division, suggests that mid-market CIOs doing phased-in rollouts start with laptops, since the security benefits will be felt the most by mobile users.

Devenuto has one other concern. "The look and feel of Vista is different," he says. That means that mid-market CIOs could end up with one additional expense that they hadn't counted on: training.

"You'll need at least an hour to teach people the intuitiveness of it," he says.

–B.W.

What's the Answer? Steve? Kevin? Ray?

Microsoft is a product company, and for the past decade its Windows and Office products have stood head and shoulders above all others. Historically, those two business units have been responsible for almost all of the company's earnings. However, that's changed over the past several years. Revenue for Windows and Office has remained relatively flat, while the server and tools division has posted double-digit revenue growth for 16 straight quarters. Today, the server and tools division is almost as large as the veteran groups—generating 22 percent of Microsoft's $44 billion in revenue, compared with 29 percent and 25 percent for the Windows and Office business units respectively.

If the company is going to reinvent its enterprise business around one of its units, this is the one to pick, says Rick Sherlund, an analyst who covers Microsoft for Goldman Sachs.

But creating tools that allow CIOs to manage, configure and provision a suite of disparate applications is both a technical and strategic challenge. And no one, inside the company or out, can articulate exactly how Microsoft is going to get there.

Ballmer says that Microsoft has many of the tools in place but that they are "certainly not anywhere close to sufficient," adding that "no one product is this vision." However, he believes that Microsoft has the right combination of enterprise and Web experience to pull it off. Oracle and SAP, he argues, have a scope limited to their suite of products. IBM has reinvented itself around consulting services. No other company besides Microsoft, says Ballmer, combines as much enterprise and Web experience with a rich understanding of business process.

Analysts, however, say Microsoft's competitive position may not be as strong as Ballmer describes. For starters, managing a customer's computing resources is something that Microsoft has historically left up to partners. "They have to piece about moving toward managing services," says John Rymer, an analyst at Forrester Research. Microsoft knows how to help CIOs manage its own products, but incorporating other companies' products is a substantial leap, Rymer says.

The biggest leap, without a doubt, is that Microsoft's vision requires it to embrace a heterogeneous computing environment. Yet Microsoft executives, historically averse to working with anything they haven't built themselves, seem united in their commitment to supporting non-Microsoft technology.

"We want to do it whether you're developing [applications] or whether you're consuming them, and whether we're delivering them or whether someone else is [delivering] them for you," says Lees.

One factor could make Microsoft's work supporting this plethora of applications easier: Software-as-a-service applications all have the same delivery mechanism—the Internet—which requires that they be built with a specific set of standards. These standards—XML, SOAP, WSDL and UDDI—are the same ones that Microsoft and IBM helped

NOW COMES THE HARD PART

To provide products and services that will help CIOs manage disparate Web apps, Microsoft must overcome at least three serious technological challenges

1 Building management tools. Microsoft isn't known for providing management tools, says John Rymer, an analyst at Forrester Research. Right now it leaves that to partners like Amberpoint. "[Microsoft] has products that let you manage Microsoft servers," says Rymer, "but I dare say that if you talked to the 10 IT shops that are using it, they would say it was for the development tools—not management."

2 Supporting applications built on non-Microsoft platforms. Microsoft has promoted some open standards around XML and Web services, says Rick Sherlund, an analyst who covers the company for Goldman Sachs, but actually supporting applications built on non-Microsoft platforms isn't something that the software giant has done. "I hear them say [Microsoft's future enterprise environment] will be heterogeneous, and maybe there are things they can do to help people to bridge that environment," says Sherlund, "but we haven't seen the pieces of that." One place to look for clues as to whether Microsoft is making progress working with cross-platform technology is in its Longhorn server, which is slated to be released by the end of 2007.

3 Preserving the unique features of services while integrating them. Companies will choose one software service over another based on features. Microsoft's challenge will be developing technology to work as a common interface with these applications without eliminating some of the more specialized features, says Roger Kay, president of consultancy Endpoint Technologies. That will require Microsoft to develop technology that interacts with all sorts of file formats. And if it can't deliver, "Why would you bother with it?" he asks. *–B.W.*

push through standards organizations like the W3C and Oasis at the beginning of the decade. (For the history of the standards process, see "The Battle for Web Services," at *www.cio.com/100103*.) Microsoft will have an easier time using these standard protocols to integrate with Web-based services than it would integrating with a more traditional client/server application that uses a proprietary standard, says Dwight Davis, an analyst with Ovum Summit.

There's probably a market for Microsoft's vision, says Dave Girouard, general manager of arch rival Google's enterprise division—and it may not be that difficult to achieve, since software-as-a-service providers are going to want their applications to work with a CIO's existing infrastructure. But provisioning and single sign-on are one thing; deeper integration, like porting data from an online CRM system into a legacy ERP package, will be complicated, promises Girouard.

And in the end, superficial integration will not be enough to charm CIOs. The reason that companies will adopt a particular software as a service is that its features are a good fit, says Roger Kay, president of consultancy Endpoint Technologies. Giving CIOs a single place where they can manage their software services is a great idea—but only as long as the management interface preserves the array of features that drove a company to choose a particular software service in the first place, Kay says.

Can Microsoft truly make all sorts of Web applications communicate well and play nicely?

"That's really ambitious," says Kay, noting that Microsoft will have to interact with all kinds of proprietary file formats. "It doesn't mean that they can't do it, but it will be hard."

If Microsoft really wants to be the vendor that companies turn to for managing their IT assets, it will have to learn how to support, well, all of a company's IT assets. "They have to be willing to go cross-platform, and historically Microsoft hasn't been willing to do that," says Goldman Sachs's Sherlund. "It's a bold strategy that will require broad support of other platforms and knowledge of other systems."

At the moment, all Microsoft is offering is talk. But at least it's talk that CIOs already

Microsoft Chief Software Architect **Ray Ozzie**

THE WEB 2.0 WORLD ACCORDING TO OZZIE

We asked Microsoft Chief Software Architect Ray Ozzie: Besides managing the use of disparate Web services, what other challenges will CIOs face in the new era of software as a service?

OZZIE CITES two big hurdles: Building composite apps and managing trust boundaries between Web apps.

"We've talked about composite apps as an industry for years, and it's finally really happening. We've been talking about XML and Web services for a long time... and people are finally using those technologies to weave together systems both within the data center and with partners," Ozzie says.

"At the scripting level...mash-ups and page-level composition have proven to be quite useful. Even though it's not deep, it's really easy, and you can get things together very quickly, so that's very powerful. And at the end user level, individuals are bringing together a number of different things that are useful to them in terms of small services, whether inside or outside. You can almost think of this as business intelligence for the masses, and we feel that there's a huge opportunity within Office, at that level, to help people weave together multiple services.

"In terms of managing trust boundaries, one of the huge challenges that enterprises are going to have is...managing trust between components of composite applications. In a services world, if you have a service and you want to incorporate a partner's composite, a component of that service, it's very easy to just give them a password and a URL and they have access to all your internal data.

"We believe there should be significant auditing within service components—such that when you do expose a partner to certain enterprise data...you have a complete record of the kinds of things that their app did." *–B.W.*

using open source want to hear.

"The reality of the world is a lot of companies are built through acquisition," says Ron Markezich, Microsoft's CIO. "As you build through acquisition you have a lot of different platforms, and the CIO doesn't always have the power or the budget to standardize." Markezich says that it will be up to Microsoft to learn how to work with the other systems. "Take open source," he says. "We interact with it now, but it's difficult. But it's something we have to do."

For a Microsoft executive, using "open source" in a sentence without an introductory pejorative is the first step in what promises to be a multiyear struggle.

Can They Pull It Off?

Putting the technology challenges aside, there are other reasons to doubt Microsoft's ability to execute its vision. "Their approach has always been 'put in our stuff,'" says Forrester's Rymer. Changing that will require a large cultural shift for a company that has more than 71,000 employees and is about to lose its guiding visionary, now that chairman and cofounder Bill Gates announced in June that he will leave the company in 2008.

Another challenge is this cultural shift will have to take place at the same time the company is marketing Vista and Office, two products only tangentially related to Microsoft's long-term strategy. Over the next year-plus, it's unlikely that a CIO will be able to turn on a TV or read a magazine without seeing an advertisement for Office or Vista. This will keep the company's marketing and sales organizations squarely focused on the company's old product-oriented business model. In fact, for all the talk about the Live initiative in the business and IT press, trying to find out about it from Microsoft's sales department is very difficult. Barbara Gordon, Microsoft's VP of enterprise sales, says she doesn't sell 'Live' anything and doesn't know when her organization will. They're focused on selling Vista.

Customers see this reality too. "I don't think that Vista is the link between the current environment and the Web services one," says Norton Healthcare's Devenuto, who has been beta-testing Vista for Microsoft. It's a more secure operating system, he says, "not a transitional tool."

Inside Vista

For more details on Vista's features and interface, see **ON THE LOOKOUT FOR VISTA**, at **www.cio.com/071506**.

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And, while reinventing its enterprise line, Microsoft is taking on Google and Yahoo for consumer applications, and Sony and Apple for consumer devices—game consoles and music players. "If I were a CIO I would wonder if the investment in MSN and Xbox is a distraction that will not allow them to deliver [on their enterprise strategy]," says David Yoffie, a professor at Harvard Business School. "Any company, no matter how large, has a limited number of A teams. Do you put that team on search or Xbox or the vision that you described?"

> THE FIRST SERVICE THAT YOU HAVE IS BEAUTIFUL, THE SECOND IS KIND OF NICE; FROM THEN ON YOU HAVE ALL OF THE SAME PROBLEMS THAT YOU HAD BEFORE.
>
> –Andy Lees, VP, Microsoft server and tools marketing

Microsoft counters that it doesn't comment on the makeup of its project teams but that the number of people working on the software-as-a-service management tool will increase as Vista and Office development efforts wind down.

But even if it is able to redirect significant energy to the enterprise, the new vision requires that the company move outside of its traditional comfort zone.

"Microsoft's management offerings [such as the Microsoft Management Console and Active Directory]—have historically been spotty," says Davis, the Ovum Summit analyst. "So it doesn't arrive at the table with any overarching credibility."

Microsoft's executives are all saying more or less the same things about the company's need to embrace a heterogeneous IT environment and the opportunity that managing software as a service presents. That has to continue for Microsoft to reinvent itself. "Talking the talk is step one when you are trying to change culture," says Laraine Rodgers, a change management consultant.

But while Microsoft's executives are preaching the gospel, their language sometimes betrays the company's famously closed culture. Lees, for example, introduced the concept of supporting applications built on non-Microsoft platforms by saying that's "what's called interoperable," as if no one in the room had ever heard the term before. Slips like this demonstrate just how large a change Microsoft is trying to make.

Ozzie, the man replacing Gates as the chief visionary, says supporting a Web services environment is just a logical extension of the expertise Microsoft developed in the client/server era. And at the end of the day, Ozzie says, the same skill set that made Microsoft the most important vendor then—an understanding of business issues like security, manageability and compliance, as well as its experience with development tools like .Net—will prove to be the most important factors in the software-as-a-service world.

Microsoft has the experience to build the tools that will make the services era manageable, he says. "It's unsexy," Ozzie says, "but it's what's going to make [hosted] services as important as technologies inside the data center are today." CIO

Senior Writer Ben Worthen can be reached at *bworthen@cio.com*. To comment on this article, go to the online version at *www.cio.com/111506*.

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more

As the demand for real-time data increases, as more and more information flows into the enterprise, the challenge of understanding and managing it grows proportionately. And sometimes, more is just too much.

BY THOMAS WAILGUM

WHEN YOU FIRST MEET CIO RON ROSE, he's more than happy to tell you about the 70,000 or so things that can go horribly wrong at Priceline.com, the consumer travel company built solely on a website that gets 10 million page views a day and books nearly $3 billion worth of travel transactions annually.

Generally speaking, those 70,000 data points are monitored on a real-time IT system dashboard. The company has been testing new dashboards that offer up-to-the-second information and correlation analysis on numerous systems, including the state of the plumbing and network operations; CPU utilization; various application metrics (how much time is needed to transfer data within the system); Oracle database performance; BMC-monitored performance of things like I/O utilization; operating system paging (how much data is moving to and from the systems disks; and if the operating system is running out of

Reader ROI

- How to calibrate the assimilation rate of real-time data
- How to judge the value of immediacy
- Ways to calm a nervous real-time system

PHOTO BY EVAN KAFKA

Priceline.com CIO **Ron Rose**: "The business group's hourly reports is the MTV of the technology department. They love to keep their fingers on the pulse."

RAM to work with) and a whole lot more. All those metrics (and more) are crucial to Priceline's business as illustrated by a recent Harris Interactive consumer study that found that 40 percent of online consumers will abandon their transaction (or turn to a competitor) if their initial attempt to interact with a site is foiled.

So Rose and his IT staff collect and analyze a torrent of real-time data to identify, prevent and fix problems before that happens. And he says being able to do so has saved the company millions in downtime and repair costs over the years. "Winning by not losing," he calls it.

Rose's IT group isn't the only beneficiary of Priceline's real-time capabilities. Priceline's business analysts tap into a business activity monitoring (BAM) system, which can slice and dice up-to-the-minute information detailing the types of airline tickets, hotel rooms or car rentals that are selling, the completion percentage of different types of orders and (much) more. All those data points (and more) give business users the ability to see trending demand for specific airline or hotel offerings, or whether visitors are completing transactions or bailing out at the last minute on certain products. The business users can then adjust that data to generate more sales. "[The business group's] hourly reports, which summarize the financial data as it moves through the company, is the MTV of the technology department," Rose says. "They love to keep their fingers on the pulse."

> "It takes more than just a few minutes to make a trend."
>
> –PRICELINE CIO RON ROSE

But with that dependence on such fast-moving and variable data, Rose acknowledges that users also have to be aware of any noise lurking in the system—for example, when there might not be a statistically valid amount of data (say, too small a sample size for one of Priceline's sales categories, such as bookings at one of its smaller hotels), which a business user may think is a trend when, in fact, it's not. "It takes more than just a few minutes to make a trend," he cautions.

Rose is confident, however, that Priceline is using all that near-real-time data to make better business decisions and provide a highly available website with fewer and fewer instances in which any of those 70,000 things that can go wrong do.

EVERYBODY LOVES DATA

Moving to a real-time information-delivery environment like Priceline's has long been an ambition for many companies. Real-time capabilities in business performance dashboards, systems monitoring applications, business intelligence software and supply chain management tools have propagated as companies struggle to keep up with the demands of 24/7 global operations. According to a September 2006 Teradata survey, 85 percent of responding executives say that decision-makers need more up-to-date information than in the past.

But as many companies have long known, more information, delivered more frequently, hasn't always led to faster or better decision making.)

The real-time boom has introduced some unintended busts: overwhelmed business users and IT managers drowning in too much information, with floods of irrelevant business activity alerts and system performance data leading them to make rash decisions or turn off real-time applications altogether. "If you're not giving real-time data to the right people, at the right time, you're opening up yourself to a lot of risk," says David Williams, research VP of IT operations management at Gartner.

More Data on the Way!

RFID promises a gold mine of data. Now what are you going to do when 90 percent of it proves to be pyrite?

AS COMPANIES COLLECT MORE DATA, and as the business demand for real-time data increases, so too will the demand for access to it. Right now, less than 15 percent of employees at an average organization have access to real-time information, according to Joe Thomas, global head of new business development for Capgemini. However, the emerging intelligence economy will demand that organizations empower at least 70 percent of their employees with real-time information and equip them with ways to use it.

Nowhere is that challenge more of a concern than with RFID technologies. "RFID holds great promise, but also great danger," says Kevin Poole, consulting services leader at Capgemini. "Done right, it gets you [data] at a level of detail and specificity—and in a timely manner—better than before. If it's done wrong, there's going to be between 10 times to 100 times more data available, and you run the risk of information overload." Poole says CIOs need to architect their systems to manage this flood of real-time data as well as apply business rules to help control and make sense of it all.

Hau Lee, the Thoma professor of Operations, Information and Technology at Stanford University's Graduate School of Business, compares the RFID movement to a gold rush. "All of a sudden there's this wealth of data," he says. "And as we all know, when you go to the gold rush, you need tools and techniques to filter and get the gold nuggets, because 90 percent of it is dirt." *–T.W.*

Heineken USA Director of IT **Carol Schillat**: "Everybody is crying for this data, but when you give it to them, they find fault with it. And the fault is that they don't know how to use it."

Of course, by itself, providing data in real-time isn't dangerous. "Real-time information is always useful if you know how to make sense of it," says Hau Lee, the Thoma Professor of Operations, Information and Technology at Stanford University's Graduate School of Business. "That 'if' is the problem."

Indeed, there are a steep learning curve and cultural change in a real-time environment that many organizations underestimate. "Everybody is crying for this data, but when you give it to them, they find fault with it," says Heineken USA Director of IT Carol Schillat. "And the fault is that they don't know how to use it." Ill-planned real-time data implementations can be disastrous, negatively affecting customers, profits and productivity, according to Teradata's survey.

To avoid the heartbreak of a failed real-time romance, CIOs need to understand which information their company really needs, how that information matches up with the way the business users do their jobs, and how and when it's most beneficial to deliver that information. Once that analysis is complete, CIOs can install a process and IT system that delivers more actionable and correctly timed data flows. "If the business folks haven't provided that level of detail, and IT didn't ask for it, the system can provide not enough or too much information," says Kevin Poole, consulting services leader at Capgemini. And in either case, "[business users] will start to ignore it."

REAL-TIME RELATIVITY

Like most terminology in the high-tech world, *real-time* means different things to different people in different industries. But what's common to most people's definition, says Royce Bell, CEO of Accenture's Information Management Services, is that the data is delivered "within an actionable time frame,"

PHOTO BY EVAN KAFKA

whether that means within seconds or hours.

In the financial world, real-time data is, by necessity, defined as instantaneous. Traders, brokers and fund managers have to have information on global stock, equity and commodity markets delivered by the second. One can easily see why. In the financial services industry, downtime costs anywhere from $1.4 million to $6.5 million in lost revenue per hour, according to industry sources. A similar case can be made for systems in e-commerce companies such as Priceline.com, or in the airline industry (air-traffic controllers), utility industry (controllers monitoring electricity grids) and healthcare personnel (nurses monitoring patients), where even the smallest fluctuation in data is significant.

Step away from those segments, however, and the notion of what's instantaneous begins to slow down by minutes, hours or days, and the question of just how much, and just how often, becomes more uncertain. "Most organizations believe they need live data, but [in reality] they tend to consume things in a daily cycle," says John Hagerty, vice president and research fellow at AMR Research. "Daily is about as fast as they can do it."

Consequently, other terms closely related to real-time have appeared, including near-real-time data (anything updated more frequently than daily) and right-time data (updated any time of day or week that the company has determined to be most beneficial). At Delta Apparel, a $270 million manufacturer and distributor of branded and private-label activewear, CIO Keith Smith describes his "two worlds." In one, subsecond real-time data informs decision making in Delta Apparel's manufacturing operations—from tracking when an order of polo shirts will be completed to figuring out which distribution center in the United States is best-suited to distribute those shirts in the shortest amount of time. "This is where real-time data is critical," he says. But in the other world—for sales information and budgeting—"real-time data totally falls apart," Smith says. It's just not practical or necessary.

Though Delta Apparel and Priceline were able to distinguish between the two worlds and adjust their data collection and delivery systems accordingly, many companies haven't been able to. And that's where real-time can get real dangerous.

BLINKING AT REAL-TIME

For the majority of 21st-century businesses, the possibilities of real-time data streams are endless and endlessly seductive: business activity dashboards on the PC, network monitoring alerts via e-mail, just-in-time manufacturing systems. The idea is to help people make better decisions.

But do they?

"Too much information freezes the human mind," says Accenture's Bell. "When there are too many choices, a normal human being won't be able to make a choice."

Is business reaching the tipping point of information overload?

Malcolm Gladwell, in his best-selling 2005 book *Blink*, which looked at how we process information to make decisions, described doctors misdiagnosing heart attacks in the emergency room because they were attempting to gather too much information, in too many cases sending home patients who were actually having heart attacks and admitting patients who were not. According to Gladwell, the doctors were gathering and considering far more information than they really needed "because it makes them feel more confident.... The irony, though, is that that very desire for confidence is precisely what ends up undermining the accuracy of their decision. They feed the extra information into the already overcrowded equation they are building in their heads, and they get even more muddled."

An analogous situation is happening in IT departments. A recent survey by Netuitive, a real-time analysis software vendor, found that 41 percent of respondents in larger organizations receive 100 or more alerts per day, of which at least half (more in most cases) are false positives. Of the 195 IT organiza-

Cutting Through the Fog

Tools that can help rationalize real-time management

ACCORDING TO DAVID WILLIAMS, research VP of IT operations management at Gartner, there is a new class of IT management applications (Williams calls them "learning technologies") that can gather and synthesize real-time data, correlate it with historical data and allow companies to anticipate potential problems—say, a critical networking issue for a retail website. "It's a technology that learns what's important to your company," says Williams. According to him, three vendors have noteworthy products in this space:

Integrien The company says its Alive product, using what it calls "integrity management," identifies, predicts and prevents IT-based business problems via holistic views and real-time analysis of IT infrastructure.

Netuitive According to Netuitive, its product eliminates the need for labor-intensive and error-prone manual setting of performance baselines and thresholds by self-learning a company's normal operating characteristics. Then it continuously correlates, analyzes and adapts itself to data inputs from all of the systems, servers and processes—in real-time.

ProactiveNet The company claims its Business Services Management solutions improve understanding of the performance and availability of IT services and how infrastructure affects the applications and processes that power the business. With this greater understanding, companies are better able to prioritize IT systems around processes that carry the highest business values rather than around the latest problem at hand. *–T.W.*

tions surveyed, 39 percent said that they either intentionally set thresholds *above* optimum levels to avoid excessive alerting or turned *off* their alerting functionality completely in response. In both cases, the system has been rendered pretty much useless.

Delta Apparel's Smith has seen how too many alerts can create a choke point. For example, when a Delta staffer creates an order, an e-mail goes out to a set of other employees who need to know. "In theory, that's a good practice," Smith says. "But if we're entering a thousand orders a day, and I'm a recipient, there's no way I could ever manage that information. No one can respond to a thousand e-mails a day."

> "If you change your plan with every little thing that happens, that's a bad thing."
>
> –ILG CIO ALEX MOORE

But it's not just e-mail alerts. Typically, decision-makers in manufacturing companies think that they want daily updates for their material requirements planning (MRP) system so they can make changes to plans and update forecasts and inventories on a daily basis. And vendors selling MRP systems (surprise!) usually agree with them. But, "Guess what: Reality says I can't deal," Smith says. He says that companies simply cannot make those decisions on a daily basis because there's too much information and too much flux. "It's one of those concepts that's candy in the sky," he says.

Put another way, business managers and other decision-makers are sometimes surprised and overwhelmed by the velocity and volume of data when a real-time system fires up. "You get what you ask for, not what you expected," says AMR's Hagerty.

HOW TO CALIBRATE REAL-TIME

In 2005, two researchers, one from Georgia Tech and the other from the University of North Carolina, set out to examine whether increasing the frequency of real-time data updates "enhanced performance." Would they be able to more quickly respond to changes in the environment and see the consequences of their actions? wondered Nicholas Lurie and Jayashankar Swaminathan.

What they discovered was that managers who received more frequent data points were making more poor decisions. "The danger of real-time data is that it may come to you at a frequent rate, maybe every hour, and if you respond to that data, if there's some random event and you treat the random event as systematic, it could really throw you off," Lurie says.

Yossi Sheffi, director of MIT's Center for Transportation and Logistics and author of *The Resilient Enterprise*, finds no fault with real-time data, only in the way people use it.

"The question is not, Is real-time information bad or good? There's only good in it," Sheffi says. "The danger [of real-time data] is if you would react too fast and not wait for the trend to reveal itself." As an example, Sheffi suggests that Procter & Gamble should not start making inventory or planning decisions on Tide sales at Wal-Mart based on data they receive every five minutes.

"You don't want to react to someone who came in and bought five boxes," he says. What you should do is look for trends in product sales combined with historical data—for example, during the last few days or weeks—and correlate that with other event-type data, such as in-store promotions or weather information that may affect sales. "You have to use it smartly," Sheffi says, noting that some companies right now are better at this than others.

At Priceline.com, Rose seems to have found that sweet spot for delivering real-time data to both IT and business users. The company was founded in 1998, and since then Rose says a culture of real-time data has flourished. "From day one we've always been about collecting business metrics on the fly," he says. When asked why the business prefers hourly reports, he answers that while he could offer them minute-by-minute data (the BAM system has that capability), they've discovered that anything under 15 minutes most likely wouldn't be sufficiently significant to constitute a trend or something that demands their attention.

"Hourly data is good enough," Rose says.

THE SOCK MARKET

International Legwear Group makes a lot of socks. As the third-largest sock-maker in the United States, ILG runs on a weekly cycle for processing orders from its customers, which range from Wal-Mart on down to Mom-and-Pop stores. And for the most part, ILG's planners and forecasters are able to satisfy their retailers' demands for socks and sync up those demands with ILG's global suppliers.

But if you know anything about the sock market, you know how difficult ILG's planners' jobs can be. "Sock sales are very dependent on the weather," says Alex Moore, ILG's CIO. "If it stays hot into the fall, our sales do not start climbing." Or, if a cold snap hits the South, sock sales will jump for as long as it lasts. "I don't care how good your software forecasting system is, you can't predict when it's going to get cold," Moore says.

The unpredictability and randomness that can throw off a company's supply chain system is called noise—whether it's an ice storm, earthquake, e.coli outbreak or terrorist attack. And what noise does is make computer systems, especially real-time systems, nervous. That, in turn, amplifies the perils of demand and inventory planning. "A nervous system is one in which you try to react to every little thing," says Moore. "If you change your plan with every thing little thing that happens, that's a bad thing."

It therefore becomes critical that companies develop some

type of strategy that can filter out noise and nervousness. (For a list of tools that can help you do that, see "Cutting Through the Fog," Page 62.) Overreacting to sudden and random upticks in sales can produce a deadly chain reaction in the supply chain, with each supplier downstream from the first increasing its orders and supply requirements because it wants to have enough inventory to comply with the illusory rising demand. This is called the bullwhip effect. In 1997, Stanford's Lee cowrote the seminal article on it—"Information Distortion in a Supply Chain: The Bullwhip Effect"—and the now-famous example of the variability (and challenges) in demand planning for P&G's Pampers product remains the best-known example. "You have to be able to distinguish between noise versus a real systematic shift," cautions Lee.

> "When someone says, I need real-time data, IT should ask: 'What are you going to **do** with it?'"
>
> –AMR RESEARCH VP JOHN HAGERTY

THE BEER FACTS

The fifth business day of every month used to be a significant day for Heineken USA. On that day, employees got their first glimpse of the previous month's sales data, which provided a snapshot of how well the U.S. arm of the Dutch brewer was doing. "This company lived and died by monthly data," says Director of IT Schillat. That the business users had to wait a full month to view Heineken's key performance indicators didn't bother the staff. It's just the way the beer industry operated, they thought.

But by 2000, Schillat knew differently. Industry heavyweights Budweiser and Miller had begun investing millions in building real-time connections to their distributors. Schillat turned to Vermont Information Processing, which had already made inroads in the marketspace with its supply chain products. In less than a year Schillat could stream distributors' daily sales (prices, quantities and which retail stores the beer had been shipped to) to the business. "This was huge for us," she recalls. "All of the sudden, we had daily sales."

Though this wasn't what one could call true real-time data, it was as close to real-time as Heineken had ever seen. But not everyone liked what they saw. "People didn't have a lot of faith in it," Schillat recalls, because they were still receiving their

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good old monthly feeds, and the two sets of numbers didn't always jibe with each other.

Since then, Schillat and the business users have been working to design new processes to accommodate faster data streams. But there's much more work to be done to deal with the users' training and development, and with figuring out just what data is most appropriate and actionable and how business users should respond.

GAME-PLANNING FOR REAL-TIME

That, of course, is a key part of the CIO's job, no matter the system or project: facilitating a conversation about what the business truly needs, and where and when real-time, near-real-time or right-time data feeds are appropriate.

"This is not something the business can have a couple of meetings about, define and outsource to the IT department," says Accenture's Bell. "It's a conversation about the source of data and how you use it, and what may be absolutely ideal will be completely different in 12 to 18 months' time. It's a continuous conversation."

AMR's Hagerty advises CIOs to ask these questions:

- How do people manage information flow in their part of the business?
- Do people really need real-time everything or just frequent refreshes?
- How should IT respond to support the business's data needs?

"You need to rationalize this up front," Hagerty says. "When someone says, 'I need real-time data,' IT should ask: 'What are you going to do with it?' Sometimes business users don't like that, but IT needs to know."

In the end, real-time data is only as good as the uses it's put to and the processes that support its use.

"I don't think there's danger in trying to achieve [a real-time environment]," says Delta Apparel's Smith. "But you could easily spend a lot of money trying to get to that candy in the sky, and then realize that the information overload is too great.

"Not all people understand the impact of real-time information." CIO

Senior Writer Thomas Wailgum can be reached at *twailgum@cio.com*. To comment on this article, go to the online version of this story at *www.cio.com/111506*.

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Wireless: Innovating at the Speed of Light

Mike Lazaridis
President and Co-CEO, Research In Motion

As technology matures and applications abound, the wireless industry seems to be moving at the speed of light. Industry pioneer, Mike Lazaridis, president and co-CEO for Research In Motion (RIM), says innovation is absolutely crucial to the future of wireless, positioning the technology as a standard-issue communications tool. Lazaridis offers this insight on the topic:

How do you see innovations in wireless changing the way people work in the future?

The greatest change that's upon us now is that wireless voice and data applications – such as BlackBerry – are going to become standard issue, like your phone or PC. The technology will free you from the tyranny of the desk, connecting you with all the people and all the data that matter to you. Most important, wireless applications will offer the best tools imaginable for making decisions, asking questions, reaching consensus and following up at a very low cost. Now that we've begun to experience it, I just can't see how industry will be able to work from now on without that efficiency and precision.

What do you think are some of the biggest innovations going on in wireless today and why?

As technology improves, we find ourselves in a position to provide more functionality to the user with less compromise. But because we seem to be bound by relatively fixed constraints – like size, weight, battery life and network capacity – we end up having to spend more time cultivating, evolving and perfecting the customer experience. That said, now that we've perfected wireless push e-mail, calendar and personal information management, we're seeing a pick-up in applications beyond that – such as access to corporate data, human resources, emergency response and disaster recovery. These applications are well beyond what we originally envisioned would get wireless off the ground and our customers are seeing great value in it.

What are the biggest challenges or drivers of innovation in the wireless market today?

The greatest drivers of innovation continue to be security and battery life. To start, wireless security is very different from what we see with laptops. Wireless devices are on all the time and continuously connected to your network, from anywhere in the world – so they require a very different and more complex security model. And, when it comes to battery life, there is only so much capacity in a battery. And if you're going to send twice as much information, it shouldn't surprise you that your battery life halves. Battery life is a real constraint and will impact the usability of the product in a severe way.

What do you think are some of the most innovative aspects of the BlackBerry solution?

There are many, but the one that's most taken for granted is just how easy it is to use. You can pick up a BlackBerry device and learn to use it in 10 minutes even though behind the scenes there is enormous complexity in the solution. Another thing that pleasantly surprises our customers is that once they've installed the solution for email, they can extend it to other applications seamlessly. They don't have to install new software with parallel security models and parallel middleware.

How has RIM innovated around the aspect of security?

BlackBerry has innovated the security model that allows wireless data to be picked up by organizations and governments around the world. People tend to take for granted the security implications created by wireless technology. Your employees are accessing the corporate network and confidential corporate information regardless of where they are; and they're able to do this effortlessly. It's taken us a long time to perfect security and acceptable use models for this kind of device *and* do it in a way that's transparent to the user.

How has innovation played a part in RIM's success and the proliferation of the BlackBerry device?

What we've tried to achieve with BlackBerry innovation has been a standards-based approach to connect to every important leading system as well as legacy systems. I think people often get too caught up with the name of the device's operating system to realize that with BlackBerry you can connect to anything from anywhere – reliably, securely and at a low cost. This is really the major achievement.

"The greatest change that's upon us now is that wireless voice and data applications are going to become standard issue like your phone or PC."

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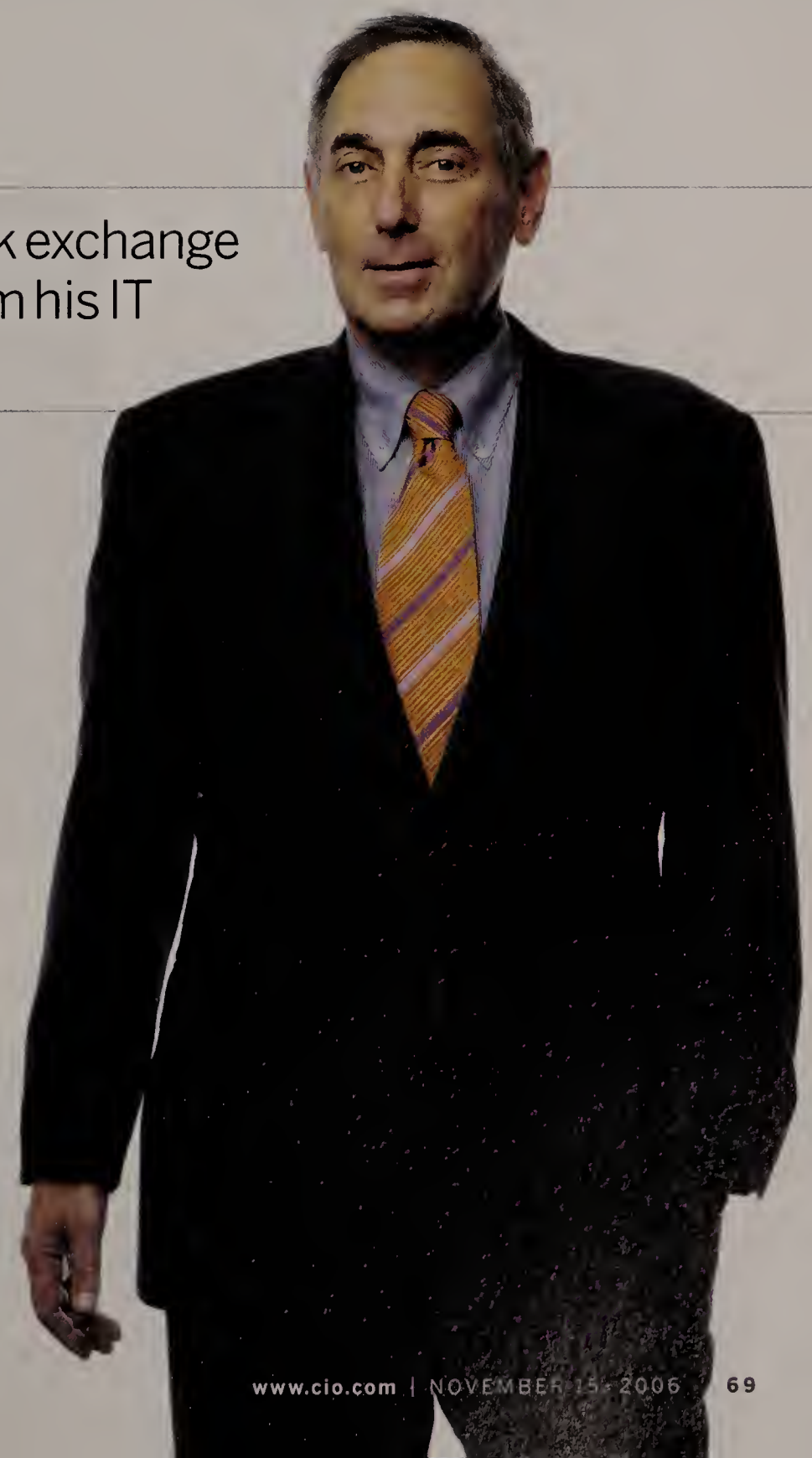
IT's Rising Stock

The CEO of the nation's oldest stock exchange expects competitive dividends from his IT

BY MATT VILLANO

Meyer (Sandy) Frucher, CEO of the Philadelphia Stock Exchange (PHLX), loves a good story. He tells them easily, like one might tell a friend or spouse about the day at work. Even when he's pressed for time, he weaves a juicy plot and leaves listeners begging for the conclusion. With this in mind, it seems only natural that Frucher relies on an anecdote to explain the importance of IT in his organization.

His story begins last year, when Richard Baker, chairman of the U.S. House of Representatives Subcommittee on Capital Markets, Insurance and Government Sponsored Enterprises, came to Philadelphia and requested a tour of the exchange. Baker's schedule was tight, so he asked to see only the most important aspects of the market. Without missing a beat, Frucher took him straight to the Operations Command Center, the epicenter of technology for the entire



Sandy Frucher, CEO of the Philadelphia Stock Exchange, put his CIO in charge of business operations.

PHOTO BY JEFF WEINER

"You have to be prepared to fail in order to succeed. There are times you're going to make an investment that doesn't pay off but is a necessary interlude at a particular moment."

–SANDY FRUCHER, CEO, PHILADELPHIA STOCK EXCHANGE

company. "He was simply blown away," Frucher remembers. "He said, 'You are the first exchange I've visited that has shown me technology as an identification of what things are all about.' I'd say that about says it all."

It certainly says a lot. As CEO, Frucher has engineered and overseen the biggest technology transformation in the 216-year history of the nation's oldest exchange. Today, the exchange trades equities, options and foreign currency options and provides equity clearing services. In years past, however, the portfolio was less diverse. The transformation began in 1998—when transactions were still being processed largely on paper and the PHLX was hemorrhaging money. The Securities and Exchange Commission hired Frucher to turn the company around and merge the PHLX into the American Stock Exchange (AMEX). The merger never materialized, but Frucher worked together with CIO Bill Morgan (who has held the position since 1995) to develop and execute the technology modernization. In a highly competitive marketplace, the PHLX needed the new technology to attract trading volume from other exchanges. Then last year, Frucher sold 90 percent of the company to six Wall Street firms—Citadel Group, Citigroup, Credit Suisse, Merrill Lynch, Morgan Stanley and UBS—in exchange for those companies' options business. The deal helped the PHLX rebound from a $13.9 million loss in 2005 to an estimated $30 million in earnings this year.

Philadelphia Stock Exchange

Headquarters
Philadelphia

Primary business
Equities, options and futures trading

2006 revenue
$102.8 million (estimated)

Employees
380

CIO
Bill Morgan

IT employees
205

2005 IT budget
$48.2 million

Re-architecting the PHLX's systems wasn't easy. To get things started, Frucher borrowed $20 million from local banks. With help from former Philadelphia Mayor Ed Rendell, Frucher also championed a capital fee to be imposed on owners to help fund the new systems. Then came the technology itself. Frucher took a hands-on role working with Morgan to devise the systems that chart trades. He also backed the use of handheld and laptop technology that help make all of the trading electronic. The process practically eliminated the traditional (and less efficient) open outcry system, in which brokers shout out their offers for trades. Paper transactions are nearly history. Today, the PHLX is the third-largest of six exchanges in the United States, executing as many as 380 million quotes a day. "Everything we do runs on technology," Frucher says. "We couldn't exist without it."

Now technology is driving the PHLX into the next decade. In September, the organization relaunched the Philadelphia Board of Trade as an all-electronic futures trading platform and unveiled a new line of business providing data center hosting services to local companies.

Meanwhile, behind the scenes, the PHLX is putting the finishing touches on its new Technology Center in the Philadelphia Navy Yard, at which point it will become the third U.S.-based exchange to house its IT and business continuity operations offsite (the others are the New York Stock Exchange and Nasdaq).

Frucher spoke with *CIO* about technology's role at the PHLX, his expectations of IT and how the exchange budgets for technology.

CIO: Considering that so much of the business revolves around IT, what are your top expectations for the department?

Sandy Frucher: The future of our business is staying ahead of the technology curve. This is a business where volume continues to expand exponentially. Because of this, IT must guarantee that we have the capacity to go with this expanding traffic. Secondly, I want them to be strategic and be able to respond to [the other exchanges that are] our competition. The last objective I'm looking for is to have them integrate our options, equity and futures products technologically so we have things running on a common platform. We're working on a slogan that is something like, "One Technology, Three Markets." We need IT to support that.

With all of these projects under way, how do you build alignment with IT?

IT can't ever go wanting. I need to make sure their part of the business is adequately funded. We made that mistake once before I arrived, and we're not going to make it again. Bill and his whole operation go through the same rigorous

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"Do not rely on anything you build to be a long-term solution, because there are forces that will make you change your strategies and your technologies at a moment's notice." –SANDY FRUCHER

budget process as everybody else, but they generally get what they need because that's the heart of the business. The other thing is that we've put Bill in charge of operations. Once you determine that IT is the business, it's silly to separate it. We consider IT "the business," so it runs the business operation.

You mention the budget process. How do you decide whether to fund a new technology investment?

We have to ensure the integrity of our markets. When we look at new technologies and competitive technologies, we need to make sure the systems do what we need them to do and that they're cost-effective. We ask ourselves, Does it make sense? Can we save money with it? Then we put it through business analysis and make determinations accordingly. Part of that cost-benefit analysis is the opportunity cost associated with how we deploy our IT manpower. It's not a question of straight dollars. It's a trade-off of one system versus another system, because we've learned that you can't do it all at once.

Is there anything that you wish you'd never funded?

No. In a business, you have to be prepared to fail in order to succeed. There are many times that you're going to make investments where the investment itself doesn't pay off in a bottom-line kind of way but is a necessary interlude at a particular moment in time.

CIO Bill Morgan reports to you. Why do you think that's important as opposed to him reporting to somebody else?

The CEO of a business has to do two things: He has to have adequate information to run the business and has to be sure that he does not have too many direct reports. With too many of those, you are limiting your capacity to manage. You have too much information coming at you, too many people that you have to interact with on a regular basis. [But] this is a business that's conducted from 9:30 a.m. to 4 p.m., and frequently there are disruptions in the process that are critical to the whole market structure of the United States. If we can't conduct business, under the law, I'm required to call a meeting of a committee that makes the determination as to whether or not to send the order flow to another exchange. So I need to have direct contact with Bill 24/7.

How do you communicate so regularly?

One is by e-mail, and we are all tethered with BlackBerrys, which operate across the world. The other is telephone, whether it's by cell or landline. When I have gone on Outward Bound trips, which I try to do every year, Bill can reach me via satellite phone. Interestingly, we actually don't see each other in person that much. My main office is in Philadelphia, but I'm not there more than two or three days a week. I spend a lot of time talking to the customer base, the regulators, lawyers, accountants and bankers.

Overall, what would you say are the biggest lessons you've learned about working with IT?

The biggest lesson is never to underfund it because it's much harder to catch up. Number two is do not rely on anything you build to be a long-term solution, because the world will change and there are forces that will make you change your strategies and your technologies to comply on a moment's notice. The third lesson is what makes the other two lessons so important: The world is changing at speeds much greater than anybody could ever have anticipated, and therefore, you can never rest on your laurels. The expression that people frequently use is, If only I could get there, but "there" just keeps moving, so you need to be prepared.

If you could change one thing about IT at the exchange, what would it be?

I would want to have triple redundancy instead of double redundancy. I'm always amazed when you have a problem with something that's so off the wall there's no way to anticipate it, and as soon as you go out and fix it, something else goes wrong. That's just the way systems are. This is one reason we decided to make the investment to build the standalone technology center—to have backups to our backups. You can't build in enough safeguards in our kind of business. All you can do is prepare for problems and be flexible enough to solve them quickly and continue moving forward. CIO

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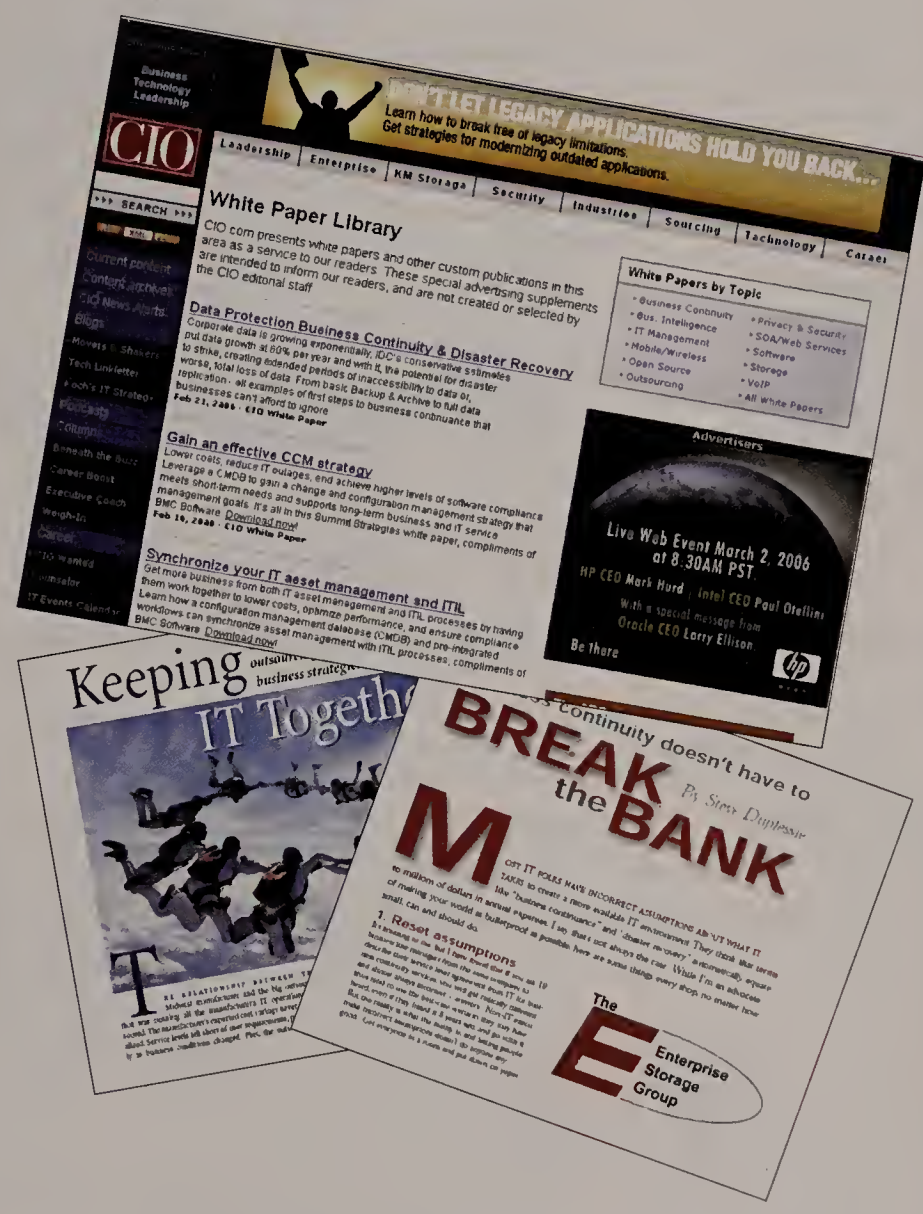

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Editorial, Advertising and Business Offices: CXO Media Inc., 492 Old Connecticut Path, P.O. Box 9208, Framingham, MA 01701-9208, 508 872-0080.

CIO (ISSN 0894-9301) is published semimonthly and as a combined issue Dec. 15/Jan. 1 by CXO Media Inc. Periodicals postage paid at Framingham, MA, and at additional mailing offices. Canada Publications Mail Agreement Number 1902075. CANADIAN POSTMASTER: Please return undeliverable copy to P.O. Box 1632, Windsor, ON N9A 7C9.

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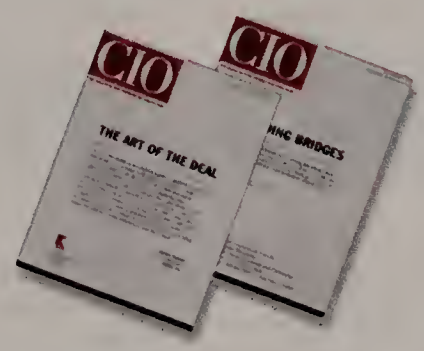

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BY SCOTT BERINATO

THE OLD NEW THING

Let Us Now Praise Famous Blogs

A quick trip through the past

1. From the DailyKOSher

Two more tablets!

Posted on Mon. by **MOSES**, during Elul at 11:32 a.m.

Just back from Mt. Sinai. Again! Got another copy of the 10 rules, carved in stone by the Big Guy, who wasn't thrilled about the first copy being broken in half. Anyway, you can find a link to the list **here**. After my brother Aaron's little **Golden Calf incident**, I'm not taking any chances. I've got an ark, and I'm going to put the tablets in there. If you want to see them, e-mail me and I'll arrange.

COMMENTS (2)

Posted by **AARON**

Cool, bro. Thanks for squaring things with G-d. Peace out!

Posted by **G-D**

Moses, good post! BTW, the ark is a fantastic idea. You left your chisel here. I'm gonna lend it to Noah. He's gonna need it.

2. From the Plain Truth

Common Sense

Posted on Wed., Jan. 10, 1776, by **TPAINE31**, at 4:21 p.m.

Well, just as I thought, the MSM (Mainstream Monarchy for you newbies) is at it again, declaring victory just because it's been a **cold winter**. Spin, spin, spin! My sources tell me TJeff is drafting a doc. that will blow the wig off George 3's thick skull! To all my faithful readers, I know these are wicked stressful times, but stick with us and you'll get the love and XXXs of the whole blogosphere.

COMMENTS (4)

Posted by **GENGEORGE**

Tom, hi from Jersey! Great stuff! Care if I forward this to the troops for a pick-me-up?

Posted by **WHIG H8R**

Typical radical junk from TPaine31. The only document TJeff is working on is the one in which he'll beg His Majesty to pardon him. And he won't. HM has hundreds of ships sailing from the Mother Country right now and when they come over the horizon, I will LAUGH! HA HA HA!

Posted by **TJEFF**

Just wait, Whig H8r. I know someone whose unalienable rights are gonna get alienated PDQ when this is all over. We're going to get ours—life, liberty and the pursuit of property—and you're going to get squadoosh.

Posted by **SAM "NOT JOHN" ADAMS**

Couldn't have said it better TJeff. But stay on message. We did a **click analysis** and "pursuit of happiness" is stickier than "pursuit of property."

3. From the Galapagos Report

Natural Selection?

Posted on Wed., Sept. 9, 1835, by **C. DARWIN**

Hello from the *Beagle*! Reading Lyell's *Principles of Geology* (get it at Amazon **here**). I saw tons of different kinds of finches on the archipelago. What if they all started out as one species and began adapting to fit different environmental niches? IMO, that would mean the ones that were fittest to survive would thrive. The others would die out. They'd evolve! Anyway, FWIW, I'm going to work on this idea.

COMMENTS (2)

Posted by **KANSASSKOOLS**

Darwin, that's like, totally stupid. You might want to look at **Genesis**. How could finches *evolve* in seven days? TTYL, Science Boy!

Posted by **CAPT. FITZROY**

Chuck, this is all very interesting, but three of your turtles are loose on deck. Could you please log off and come get them? Thx.

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